"THE FAR EASTERN REVIEW" - CHINESE RAILWAY CONSTRUCTION

A COMPREHENSIVE STUDY OF HISTORICAL REFERENCES WITHIN THE LIFE OF THIS JOURNAL OF THE DEVELOPMENT & CONSTRUCTION OF CHINA'S RAILWAYS, INCLUDING EXTRACTS OF RELEVANT PAGES (**SECTION 2 of 14**)

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For Introduction please see preface to SECTION 1 covering Vols I - V Summary of Chinese Railway Related Content

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Volume VI
June 1909

A Chinese Locomotive Specification, an article detailing the specifications for a locomotive that the Kiangsu Railway Company had invited tenders for. The company operated the line between Shanghai and Kashing. The author, who was Far Eastern Review publisher George Bronson Rea, comments on the railway company officials' apparent incapacity to write their own specification having copied the one in question verbatim from a well-known European locomotive builder's specification submitted to the company by an agent. The principal specifications for an eight-wheeled (Atlantic type) passenger tender loco are included in the article which suggests that while American made engines were cheaper they were regarded by the railway company as inferior lasting only 10 to 20 years compared with a European one which could last 30 years or more.

The Fakumen and Anhwei Railways - A Contrast, an article commenting on how the Chinese Government had awarded contracts for building and provision of loans for the Fakumen extension of the Imperial Chinese Railways of North China line to British Interests. This had been done because theChinese needed British support to overcome Japanese objections to the railway. On the other hand Peking had just cancelled an agreement by which the same British interests were to have provided loans, materials and management for railway projects in Anhwei.

Imperial -Tientsin-Pukow Railway A tender invitation for rolling stock for the Southern Section.
Chinese Railway Telegraph Lines a report of a proposal to run telegraph lines along all the Imperial railway system.
South Manchuria Railway School 644 students had reportedly enrolled.
Canton-Kowloon Railway repoert that cost of this line would be in excess of $1000,000.
Kiangsu Railway The section to Fengching had opened on May 30th and whole line would be completed by about 1911.
South Manchuria Railway Earnings for the previous six months reported.
Peking-Kalgan Railway The entire line was expected to be open by June.
Want Swing Railway Bridges The Tientsin Chamber of Commerce was demanding that railways spanning rivers should be on swing bridges.
New Honan railway Report that a survey had been completed.
The Anhwei Railways Announcement that Messrs. Pauling would finance this line.
Canton-Macao Railway It was understood that a syndicate would be granted a franchise very soon.
Souh Manchuria Railway the company had announced that new workshops would be built at Dairen as well as other facilities at various locations.

July 1909
The Times and the Fakumen Railway, an article reporting that the foreign editor anf Peking correspondent of “The Times” had visited Japan and won over to the Japanese viewpoint with regard to the ongoing dispute about this railway and about misconceptions concerning Japanese policy in Manchuria. The FER also appears to have reversed its position and goes on to suggest that China should stand down and acknowledge her error.
China’s Ingratitude, an article reporting that C.W. Kinder had finally severed his connection with Imperial Railways of North China after 31 years service. Kinder had been virtually forced to resign his position by ungrateful Chinese officials, having devoted his entire life to the advancement of China’s railways which were now China’s most valuable revenue asset. Kinder’s honest and efficient engineering management had given China over 600 miles of railway which the previous year had earned $8000,000 in profits. The unfair treatment of Kinder opened eyes to China’s base ingratitude to a loyal and devoted servant and showed that China was not living up to the strict letter of her obligations. The article includes a copy of Kinder’s resignation letter to Liang Shi-Yi the Director General. The article goes on to explain that Kinder was owed 21 months leave which had accumulated during his 31 years service. Kinder had requested pay in lieu of leave amounting to £3,500 but this had been declined. Instead the Director-General had offered a £600 “bonus” plus a position in London as Advisory Engineer for a further three years during which he could earn back his missing leave pay. Kinder eventually accepted the London position at £2,000 per year. This shabby treatment contrasted with the case of M Jadot who had constructed the Peking-Hankow line. Jadot for only 5 years service had been given a £10,000 bonus for finishing the railway and an additional £2,000 for building the Yellow River bridge.
Yueh-Han Railway, Supplies, two Japanese banks were interested in forming a company to supply materials to the railway.
Peking-Hankow Railway, the company planned to acquire 200 more carriages and to build hotels along the route.

Hunan and Hupeh Railway Loan, Chang Chih Tung had arranged with European banks to provide loans for the redemption of the lines running through these provinces.
Antung-Mukden Reconstruction, China was trying to discourage the widening of the line to standard gauge.
Yalu Railway Bridge, construction had begun.
Grain Elevators of South Manchurian Railway, the SMR were considering building these at Dairen wharves.
South Manchurian Railway Hospital, the building occupied by the Yamato hotel would become a railway hospital when the new HQ was occupied.
Kiangsu Railway Opening, the first section of the Shanghai-Hangchow-Ningpo Railway from Shanghai to Fengching was opened 30th May. The line was built under the direction of Mr Chin. The locomotives came from American Locomotive Company and the coaches were also from USA.
Hong Kong –Canton Railway, the Hong Kong Council had approved construction expenses for 1909. The tunnel had cost much more than original estimates.
Peking-Lake Baikal Railway, the extension of the Peking-Kalgan line to connect with the Trans-Siberian line was receiving support in Peking.
The Sunning Railway, the Kunyik-Taushan section of this railway covering 40 miles had been completed and opened in June. The first section of 15 miles from Sunning to Kunyik had been opened a year earlier. There were 9 locomotives in operation, 6 are from Baldwin and 3 German. It was proposed to connect Kunyik with Kongmoon, a distance of 30 miles. Chin Gee Hee was the railway's president who had gained his experience in America.
Russo-Chinese Railway Agreement, a new agreement had been concluded which recognized China's suzerainty over the line, equal treatment of Chinese and foreigners and various control measures.
Peking-Kalgan Locomotives, three 100 ton Shay locomotives designed to climb steep grades had been sold to the management by agents Shewan Tomes of Tientsin. The locomotives would be delivered in November.
Tsingtao-Tsinan Railway, the Peking Government had exchanges notes with Germany about redeeming the railway and clarifying Germany's rights.
Doubling South Manchurian Railway Lines, doubling between Choshuitz and Nankwanling had been completed in June.
Reduction of Likin on Shanghai-Nanking Railway, Peking had authorized a reduction of Likin (tax) on goods carried on this line.
Mukden Railway Hotel, the railway intended to erect a a two story station with one half set aside for an hotel.
Tientsin-Pukow R. R. Invitations for the supply of Cement and Steel Girders

August 1909

Rulers of China, A series of portraits of Ching Dynasty rulers accompanied by short biographies. Among those mentioned are Tuan Fung, Viceroy of the LiangKiang, who was based in Nanking when the Shanghai-Nanking Railway was completed. He used this occasion and opportunity to building the Nanking City Railway. Also included are Sheng Hsuan Huai (Sheng Kung Pao), Tang Shao-Yi, Chow Chang-Ling (C.L. Chow) , Tsai Shao-chi and Chung Mun-Yew, all connected with railways.
Far Eastern Railways -Shanghai-Nanking Railway The budget and earnings report for the past six months.
South Manchuria Railway Hospital Report about an extension.
Tientsin Terminus Report that the railway terminus was to be relocated.
Peking-Hankow Profits A management estimation of earnings for the year.

Chinese Railway Supplies The Peking overnment had ordered railway companies to purchase rolling stock from the Tongshan & Changsin works.
Chinchow-Tan Nan Railway this railway connecting with the Trans-Siberian line had been authorized.
Formosian Railways The Japanese wished to improve communications in the east of the island and a survey was underway.
Peking-Kalgan Railway The line had been completed.

September 1909

Chinese Loans and Agreements. A report that long-negotiations for the Hankow-Szechuan Railway loand had finally been concluded. There had been a dispute about American participation in the loan. The new agrrement was for an increased loan at 5% of £6,000,000 involving four powers: British, American, French and German.
Antung-Mukden Railway, Japan and China had reached an accord on the reconstruction of this line
following serious interruptions to the line's operations.
The Paknam Railway Company Ltd., report for the half year ended June.
Formosan Railways, the existing railway comprised about 271 miles of line. A line from Taito along the east coast was being surveyed. Construction would take about 7 years. There were also a number of narrow gauge coolie-powered lines as well as steam or bullock powered sugar cane lines.
Steamer Connection with Chinese Railways, Peking had proposed that the China Merchants Steam Navigation Company arrange steamer connections with the Peking-Mukden Railway at Newchwang, the Peking-Kalgan Railway at Tientsin and the Shanghai-Nanking and Peking-Hankow lines at Shanghai.
Burma-Yunnan Proposed Railway, the construction of this line connecting China with India was again being discussed in the British press.
Hsin-Ning Railway Extension, Peking had approved the extension of the line to Humen.
Chang-Chow – Amoy Railway, Peking was reportedly pressing for the construction to be speeded up.
Antung-Mukden Railway Reconstruction, the Commissioner of Customs at Antung stated that Antung's fortunes depended on the upgrading of the narrow gauge line to standard and a bridge across the Yalu to link up with the Korean system. A loan had already been raised by the SMR in London to be used for this purpose. The northern terminus was to be in Sukiatun 10½ miles south of Mukden. The reconstruction would be divided into 14 sections, the whole taking less than 3 years and the old equipment was to be used by the SMR on the Yentai and Fushan colliery lines.
Old Manchurian Rolling Stock, two Japanese companies had been awarded contracts for the repair and reconstruction of old locomotives and rolling stock of the SMR which had been removed to Japan.
Consolidation of Chinese Railways, Peking had indicated it favoured consolidation of the management of the Peking-Mukden and Peking-Hankow Railways and had appointed a committee to investigate feasibility.
Kirin-Changchun Railway, China and Japan had agreed that the Engineer-in-Chief and Chief Accountant would be Japanese. The costs would be borrowed from Japan and the agreement would run for 25 years during which time the line would be run jointly by the Chinese and Japanese.
The Chekiang Railway, A visiting American engineer had written to the president of the company congratulating it on the very high standards of construction but low cost.
Kowloon-Canton Railway, construction was progressing well between Hunghom and Tsimshatsui.

South Manchurian Railway Winter Freight Schedule, capacity would be increased to 8000 tons per day.
Mongolia Trunk Line, Peking was proposing a Ili-Tsitsihar trunk line.
Kiangyin-Wushi-Military Railway, the Board of War had proposed this line.
Peking-Kalgan Railway Extension, Peking had recommended extension of the line to Suiyuanhing by way of Tatung and Sopingfu. The line was expected to cost 60 million Taels and take 8 years to build.
Kirin-Kuangchengtze Railway Agreement, the text of an agreement signed 18th August between China and Japan for the construction of this railway.

October 1909,
Kiangsu-Chekiang Railway, the 'Yuchuanpu" (Board of Communications) wished to have the railway placed under its control.
Chinese Timber for Railway Sleepers, the authorities were encouraging railways to use local timber instead of imported materials.
Kowloon-Canton Railway, Mr S.S. Linday, Deputy Chief Engineer of South India Railway was to take the position of Chief Engineer.
Chinese Eastern Railway Extension, Russia had completed the extension of the line to Tsitsihar on 27th September.
Szechuan-Tibet Railway, the project was under much discussion in Peking but methods of financing were causing disagreements.
Kansu-Turkestan Railways, the Prince Regent was in favour of constructing this railway.
Antung-Mukden Railway Construction, the question of duty on materials was the subject of disagreement between China and Japan.
South Manchuria Activity, the doubling of lines to Sukiatung was expected to be completed this month.
Chinese Eastern Railway Redemption, Peking had directed negotiations begin with Russia concerning redemption of the railway.
Supplies for the Mukden-Antung Construction, the Tiehling flower mill had secured a contract to supply flower for the 50,000 coolies expected to work on the line.
Kirin-Hoiryong Railway, the line would run from Kirin to Tungchwacheng, Hwangtunghotsz, Chientao and Hoiryung according to a China-Japan agreement.
Japanese Sleepers for the Tientsin-Pukow Line, a contract for 50,000 ties had been concluded.
Nanking City Railway Extension, the line was to be extended 60 miles to Wuhu.
Official Text of Recent Agreements Between China and Japan, the full text of this agreement concerning Korea, Manchuria and railway disputes is reproduced.
Surynen Cheng -Peking-Kalgan Extension. Report that this extension to Suiyuan had been approved.
The Kowloon Canton Railway (British Section) Estimates for construction of this line in 1910 had been calculated.
Arnhold Karberg & Co., full page advertisement for Baldwin locomotives and other railway equipment.
Kirin-Kuangchengtze Railway A report that work on surveying the line would commence in the spring.
Railway Officials Taotai Jeme Tien-Yow had been appointed General manager of the Szechuan-Hankow and Peking-Shiyuan (Suiyuan) lines.
Tsitsihar-Hunchun Project The Russian Government had petitioned to construct this line.

Chekiang railway Company Report that the government had ordered the company to extend the line.
Canton-Macao Railway Proposla for this line were still being pursued by the Portuguese.
Kashing's Railway A report that three trains a day were running between Kashing and Hangchow.
Chao-Chow Swatow Railway a report that money had been returned to Japanese capitalists by the Director General following a reprimand from Peking.
(Note: see following November issue extracts for identical scans of the following 3 advertisements)
Shanghai-Nanking Railway, full page advertisement for “The Line of a Hundred Pagodas”.
South Manchurian Railway Company, full page advertisement for its thrice-weekly express service between Dairen and Changchun with connections for the Trans-Siberian Express. Also lists the branch lines, through passenger tickets for the SMR, Imperial Railways of North China and Imperial Japanese Railways.
Baldwin Locomotive Works, small framed advertisement for Baldwin locomotives.

November 1909

Special edition of the Far Eastern Review devoted entirely to Railways in China 1909, 120 pages containing a description of all railways in China at the current time, details of loan agreements with a plea from the publisher, Geo. Bronson Rea for “Fair play to China”. Rea’s opening editorial compares the terms and conditions of the various foreign railway loans, which have many unreasonable and one-sided aspects unfavourable to China and are in fact an insult to China’s dignity and sovereignty. The 1898/9 British loan for the Peking-Mukden-Newchwang railway for instance was an agreement lasting 45 years and which gave the British interest supreme control over the lines management and assets with the nominal Chinese Director-General being virtually subordinate to the British Chief Engineer (Kinder) and the British Chief Accountant. Whilst Kinder ran an undisputed honest regime he was authoritarian and always favoured British railway operating methods and this included the purchasing of almost all railway supplies from British companies that were on his “approved” list to the exclusion of others. Kinder also had complete authority over the hiring and firing of senior personnel. All this led, not unnaturally, to tensions between him and the Chinese directors who were nominally in charge of the railway. Rea continues by comparing this loan agreement with other foreign loan agreements such as for the Belgian Peking-Hankow loan. This and other agreements were not so one-sided in favour of the foreign interest and although senior foreign staff had almost total management authority, the control was exercised nominally through the Chinese directors thus preserving China’s dignity and causing less inter-racial tensions. The usual argument advocated for foreign investors to have total control over management and finances was because Chinese officials could not be trusted to administer loans honestly. There had indeed been some glaring cases of loan money being misappropriated, notably by the Chinese Managing-Director of the Northern (German) section of the Tientsin to Pukow Railway Taotai Li and his confederates who managed to make off with $2,400.000 (one fifth of the entire German loan). Having a German Chief Engineer overlooking the accounts also did not prevent him from achieving this. The Chinese viewpoint was that it was inconceivable that the German could have overseen these losses without collusion thus proving that

foreigners could no more prevent dishonesty than Chinese. Yet another point to this argument was that a number of railways had been built exclusively by Chinese and these lines had been well built and for much less cost which in itself proved there had been little if any dishonesty. Whilst Kinder and his like were undoubtedly loyal and honest to their employers, Kinder's insistence on buying only from what he believed to be suitable suppliers from his own home country actually led to a lack of truly competitive tendering resulting in higher prices and commissions to the various foreign agents in the purchasing chain. Rea concludes his article by listing the comparative costs of building lines under foreign control with those built by the Chinese. The figures, Rea concludes, speak for themselves, in that China is forced under the restrictive wording of the loan agreements to pay much more for her foreign built railways than those self-built. It was time for FAIR PLAY! Included in the article are photographs of H.E. Hsu Shih Chang, President of the Board of Communications; H.E. Wang Ta Hsieh, Vice President of the Board of Communications (Yuchuanfu); H.E. Shen Yun Pei, Acting Vice President of the Yuchuanfu, H.E. Tsen Chun Hsuan, ex-President of the Yuchuanfu; H.E. Sheng Kung Pao (also known as Sheng Hsuan Huai) Vice President, Board of Communications & former Director-General of Railways; H.E. Tang Shao Yi, Director-General of the Shanghai-Nanking Railway during construction; H.E. Taotai K. S. Low, Managing Director of the Southern section of the Tientsin-Pukow Railway; H.E. Chow Chang Ling (C.L. Chow), Managing Director of Shanghai-Nanking Railway; H.E. Chung Mun Yew, Managing Director of the Shanghai-Nanking Railway; H.E. Liang Ju Hao, Former Managing Director of Imperial Railways of North China; H.E. Liang Chen Tung (Sir C.Y. Liang), ex Director-General of the Canton-Hankow Railway; H.E. Shih Shao Chi (Alfred Sze), former Director of the Peking-Hankow Railway, H.E. Tsai Shao Chi, former director of Imperial Railways of North China; The Late Chang Chih Tung, late Director-General Canton-Hankow Railway; H.E. Lu Hai Huan, ex Director-General Tientsin-Pukow Railway and H.E. Taotai Chan Tien Yu (Jeme Tien-Yu) builder of the Peking-Kalgan Railway.

Memorial of H.E. Tsen Chun Hsuan on Railway Systems for the Empire, the translated text of a memorial presented to the throne which advocated the unified control of all of China's railways.

The Fakumen Railway, this line, which was to be a 50 mile extension of the existing IRNC line to Fakumen, had received much publicity and had been covered previously by the FER in the June 1909 edition. Tang Shao Yi had pulled off a diplomatic coup by engaging British interests to construct and finance the line, when in fact the IRNC were capable of carrying out the project themselves and funding it from the huge annual profits being generated on the line. Tang's purpose in awarding British contracts had been to gain British support for China's position against Japan, who had been objecting to the extension. The British Government, however, were not in the mood for supporting China's political intrigues and her interpretation that Japan was being threatening over the issue. Britain would in any case probably wish to maintain good relations with her allies which included Japan. China had since requested the affair be referred to The Hague for settlement but Japan had not been in favour of this. Japan wished to settle the issue diplomatically and allow the extension to Fakumen but it would look down upon further extensions into Manchuria that might menace her strategic and commercial advantage there. In addition to the Fakumen question there were also the differences between China and Japan about the reconstruction of the Antung-Mukden railway. These differences over Manchuria were of vital importance to China and unusual tact and diplomacy had been needed to

avert disaster. Chinese owned newspapers had made matters worse by stirring up peoples' emotions with insulting attacks on Japan. The article concludes by reporting that a Manchurian Convention had just been signed which on a temporary basis put their differences on hold.

Chefoo-Wei-Hsien Railway (Chefoo-Chining Railway Company), this project had been on the boards for three years. The Shantung Railway to Tsingtao had diverted trade away from Chefoo to German controlled Tsingtao and this was a matter of grave concern to Chinese merchants and officials. By building the line it was thought that the trade would return to Chefoo. A similar situation applied to Newchwang which was in decline because of the new SMR port at Dalny. The Germans were, not unnaturally, opposing the plan in much the same way as Japan opposed the Fakumen extension of the IRNC. The FER suggested that the German objection was most unfair and was equivalent to suggesting that China had forfeited all its rights in Shantung province to develop trade at her own ports. Although the project had been approved by Peking more than a year earlier and some money raised it appeared that insufficient funding was a major reason for the delay in starting construction.

The Wu-Kuang Railway (Wuhu-Kwangtehchow), officially known as the Anhui Railway Company, it had been founded in 1906 by Lord Li Ching-fang (adopted son of Li Hung Chang) for the purpose of connecting the Treaty port of Wuhu with Kwangtehchow on the Chekiang border. The survey had been completed by a Norwegian engineer, Mr. Puller and construction work had started in 1907 on a cargo depot next to the river for transfer of freight. In May 1907 ,however, Lord Li had been appointed Minister to Great Britain and since his departure the work had stopped for lack of funds. There were now rumours that a foreign loan was being sought for the line.

Imperial Railways of North China, this 9 page article describes in great detail the history and development of the railway starting with the tramway at Tongshan. In 1878 Tong King Sing, DirectorGeneral of the China Merchants Steam Navigation Co. and Viceroy of Chihli, Li Hung Chang joined forces to develop coalmines in the district of Kaiping. The Chinese Engineering and Mining Company sunk its first shaft at Tongsahn in 1878 but were faced with the immediate problem of getting coal to Lutai, the nearest Peitang River port some 30 miles distant. Tong advocated a railway and Kinder was engaged as an engineer for the mining company with this in mind. Peking objected to the railway and gave authorization for a canal to be built to link the mine with the river. The canal was indeed built but was still 7 miles short of the required point. Authorization was then given for a mule-hauled tramway and it was under Kinder's persuasion that the tramway was built to standard gauge, with Kinder undoubtedly having further advances in mind. Without Peking's authorization Kinder constructed a locomotive using a portable winding engine and othet scrap mining steel and equipment. The locomotive was christened the "Rocket of China" on June 9th 1881. The authorities objected to the locomotive but eventually with Tong's and Li Chung Hang's support Peking's objections to the use of the locomotive were overcome. In 1882 two tank locomotives were purchased and Kinder, who had become Engineer-in-Chief set about extending the track to Lutai. For this purpose the Kaiping Railway Company was formed and a British educated Chinese lawyer Wu Ting Fang was appointed its head. The line was completed in six months and an American locomotive and 40 ten-ton coal wagons purchased. Viceroy Li Hing Chang then campaigned for the extension of the line to Tonghu and then further to Tientsin arguing that it was a military neccessity for defending Peking. This scheme was eventually approved and once again the name of the line was changed, this time to the China Railway Company. The railway,

financed by loans raised by the Hong Hong & Shanghai Banking Corporation, was completed to Tongku in April 1888 reaching Tientsin in August. By November trains were travelling daily from Tongshan to Tientsin. Permission for further extension to Tungchow, 12 miles east of Peking, was sought but not obtained and there were also serious local objections to the extent that a railway bridge being built at Tientsin was destroyed to pacify the local people. Meanwhile,however, the railways progressed north-east with an extension to Kuyeh in 1890, Shanhaikwan in 1891 and a further 40 miles beyond this by 1894 when war broke out between China and Japan. Following the war China authorized the line's westward extension to Lukouchiao but not to Tungchow. Eventually however the line went to Fengtai and then Machiapu and not Lukouchiao. Meanwhile another name change came into being with the railway being taken over by the Chinese Imperial Railway Administration under Director-General Hu Yen Min, who was also Governor of Peking. At this stage further loans were raised by a syndicate "The British and Chinese Corporation" formed by the Hong Kong & Shanghai Bank and Jardine Matheson & Co. for the purpose of further eastern extensions from Chunghousa to Hsinmingting and a branch to Yingkow. This brought about Russian objections over their interests in Manchuria and the loan agreements and previous Russian railway agreements were renegotiated. By February 1900 the line had extended to a point 20 miles beyond Kaopangtzu but then the Boxer troubles broke out causing everything to come to a grinding halt. In the meantime Hu Yen Mei had been succeeded by Chang Yen Mao who was not in sympathy with Kinder. Chang made several attempts to have Kinder removed as Engineer-in-Chief but failed and Kinder was rewarded at this time by the award of C.M.G. from the British sovereign.

The Boxer troubles stopped any further progress on the line and the allies almost came to blows over the line because Russia had grabbed control of much of the line to the northeast. In January 1901 the British military were reapairing and controlling the line from Peking-Shanhaikwan with the Russians still hanging onto the more northerly sections to Newchwang. By October 1902 the British had regained control of the line to Newchwang and shortly afterwards the line reverted to the Chinese Imperial Railway Administration. During the period of military control the 12 mile branch from Peking to Tungchow had been built. By late 1903 the line had been extended to Hsinmingting. Beyond this point a narrow gauge line built by the Japanese military during the Russo-Japanese war extended to Mukden and this had recently (1907) been purchased by the Chinese Imperial Railway Administration. There was also a branch from Tangho to Chinwangtao (6 miles), which had been built as a result of the Boxer troubles. The article continues with revenue accounts and also shows the costs of building the line and facilities. Next described are the Shanhaikwan Bridge Works, which had been established to provide steel bridges for the IRNC lines and other lines in China. The project had, however, not been a financial success because the bridges were made only to British specifications and were not suitable for other railways in China under foreign construction. The directors of the company were considering trying to impose their bridge-building standards on all railways in China to force them to purchase from their works. Next described are the Tongshan Railway Workshops of the IRNC, considered to be the largest and best equipped works in China or Eastern Asia. The works design and build rolling stock and locomotives under the supervision of ex-General Manager C.W. Kinder and the Shops Manager Mr Jamieson. In 1908 the IRNC had 267 passenger carriages, 2,742 freight wagons and 126 locomotives. During the same year the works had produced about 250 carriages and wagons for their own railway and other Chinese

lines but the use of British standards was again a hindrance to sales to some lines. If ever China imposes common standards on all its lines the British were in lead by virtue of the fact that British engineers controlled China's largest railway works. Most of the IRNC locomotives were also British built although a few American ones had been purchased. These had been judged as troublesome and always in need of repair. Next covered is the Tongshan Railway and Mining College which had been established in March 1907. There were 120 students and 4 lecturers all of whom were British. The college owed its establishment to Yuan Shi Kai and was supported by IRNC and the Chinese Mining & Engineering Co. In 1908 the college principal had been given notice of termination by the head of the railway board without reference to Kinder who, under the conditions of the loan agreement, as Chief Engineer was supposed to be consulted. This and other instances of dismissal of British employees had come to a head resulting in Kinder's recent resignation. Kinder had insisted very strongly that he had to be consulted and the matter had become a question of "face" with the Chinese resenting Kinder's inference that they were unable to manage their own affairs. The article concludes by describing the port of Chinwangtao which was China's only ice-free Treaty port in North China and located 10 miles from Shanhaikwan and 5 miles from Tangho, the nearest station on the IRNC line. Included is a sketch map of the port. There are 28 photographs of vaying size and quality of IRNC stations, locomotives, rolling stock, depots and a small picture of C.W. Kinder.

Shanghai-Hangchow-Ningpo Railway, the British & Chinese Corp. had originally secured a concession to build this railway in 1898. However during the international sqabble to secure more railway rights the beginning of construction of this line by B&CC had slipped for several years and two native companies had been formed to build the line. The section from Shanghai to Fenching in Kiangsu was taken up by the Kiangsu Railway Co. and the Fenching to Hangchow section by the Chekiang Railway Company. Peking unilaterally transferred the rights for this line from the British company to the Chinese one in September 1905 and worked commenced immediately.The British objected and to pacify them Peking, under pressure, over-ruled local objections and permitted the company to provide a loan for the work with conditions similar to the Tientsin-Pukow loan issue. This arrangement did not, however, work out and the local companies refused to use funds provided by B&CC or purchase supplies through them. Peking once again had to intervene and seek a compromise. Eventually (1908) the B&CC loan was made to the Board of Communications who in turn loaned the funds to the provincial railway companies. The Dirtector-General of the railway was, however, obliged to select a Chief Engineer from England or choose a British engineer currently employed by IRNC. Materials purchased through B&CC would not be liable to commissions being paid by the provincial companies, these being met by the Board. If, on the other hand, materials were not purchased through the B&CC the companies would have to pay compensatory commissions to B&CC. In June 1908, in order to finance the extension to Ningpo and to build the Chien Tang bridge at Hangchow a further increase in capital was authorized. Once again the local provincial companies refused to accept foreign (B&CC) loans and declined to make purchases of equipment through them and as a result compensation of $250,000 in lieu of commission was payable. Chekiang Railway company had been allotted $450,000 of the B&CC loan, but not wanting it had loaned the money to Chinese banks at a higher rate of interest than they were paying the Board of Communications. The British engineer appointed for the Chekiang section (D.P. Griffith according to the China Year Books) did not

report until 78 miles of the line to Hangchow had already been constructed but he was still to be retained for the Hangchow to Ningpo section at a salary of $16,000 per year. The Chinese officials were paid much lower salaries. For instance the Secretary and Chief Engineer T.C. Pu, an American (U. of Calif) educated Civil Engineer was paid only $2,700 per year. The article next describes the track and depots along the two sections. On the Kiansu section the rolling stock was American with the 1st and 2nd Class cars coming from Harlan & Hollingsworth of Wilmington, Del. And the locomotives from ALCO. The car wheels had been fitted to Chinese standards, being 9inches more in diameter. To allow enough clearance the bodies had been blocked up and the effect was described as a “botch”, everybody blaming the American equipment whereas the real cause was those ordering the equipment. The Chekiang line had a real menagerie of rolling stock with nine different types from various makers. There were two German Borsig tank engines, 6 British Hudswell Clark tank engines and 4 Mogul type locomotives from ALCO. 10 passenger carriages had come from Renshaw of England and 11 from the Pullman Works of Chicago. Freight cars had been provided from a number of sources including the Tongshan Works. The article includes 28 photographs of engineering staff, stations, rolling stock, locomotives & depots.

Swatow-Chaochowfu Railway, the Hong Kong registered Chao Chow & Swatow Railway Company Ltd., according to FER, was the first distinctly Chinese railway organization which had succeeded in building and operating a railway. The concession had been granted in 1903 to Chang Yu-nan who had made his fortune in Java. Constructed began in 1904 and 24 mile long railway completed and opened to traffic 16th November 1906. The construction work was contracted to the Japanese engineering company, Mitsui Bussan Kaisha. The railway had 3 American manufactured locomotives, 24 coaches from Japan and 48 freight cars. The complete journey took about one hour and thirty minutes and fares were 67 cents for 1st class and 27 cents 2nd class. Engineers (drivers), conductors and dispatchers were Japanese but all other employees were Chinese. There was a plan to extend the Swatow end of the line to the harbour shore but owing to the great expense of reclaiming land for this purpose, the project had been shelved. There were also plans to take the line north and eventually link with the proposed Whampoa-Amoy line. Includes 14 photographs and 1 sketch map of the line.

The Sunning Railway, this line, which was under construction, would be 55 miles in length connecting Kung Yik, a point on the Sunchong Creek about 7 miles from the Treaty port of Kong Moon with a harbour site known as Sam Kap Hoi, south-west of Macao, via Sunning. 40 miles of the line had been opened in June 1909. The FER claimed that this was the first railway financed, constructed and operated in China (although this viewpoint seems to conflict with earlier editions which credited the Peking-Kalgan line with this distinction). The first section of 15 miles from Kung Yik to Sunning City (Toishan) formally opened on 6th January 1908 and in June 1909 an additional 25 miles had been opened. The line was standard gauge awith the rails purchased from Belgium and Germany. The rolling stock comprised 6 American (Baldwin) and 3 German saddle tank locomotives. There were eight 1st class American type corridor carriages supplied by Harlan & Hollingsworth of Delaware and 100 box and flat cars. A number of the box cars had been fitted out as 2nd class passenger carriages. European style side buffers had been fitted but these had proved unsuitable, many having broken off on the curves. Initially temporary matsheds were used as stations but more recently two commodious stations had been built at Sunning City and Kung yik. The railway according to FER could be considered a American

railway built by Chinese. The company's president and chief engineer Chin Yee Hee had gained all his railway knowledge in USA and American Chinese had subscribed the bulk of the capital for the project. The local Sunning people were said to be very proud of their railway particularly because no foreigners were employed on the line. The company was currently seeking to extend northwards to connect with the Canton-Hankow railway at Fatshan via Kong Moon but there was some opposition to this from the latter railway. The new harbour port at Sam Kap Hoi was still under consideration by the Imperial authorities but the line would reach there by the following year. 13 photographs.

The Tao-Ching Railway, (Imperial Chinese Government Honan Line / Pekin Syndicate Railway), the Pekin Syndicate had been organized in 1897 for the purpose of developing the mineral wealth of Shansi and Honan. The syndicate had obtained concessions for this purpose and a clause in the agreement allowed for the construction of such means of transport as were necessary to connect with rivers, roads and main lines etc. The Chinese viewpoint was that this permitted only small branch lines of railway whereas the syndicate took the view that it could use this clause to build lines to the Yangtsze Riverat its own discretion. A survey was conducted in 1898 and the syndicate eventually intended to build a line of 350 miles to Nanking (Pukow) as well as a line from Taokou on the Wei River in N.E. Honan to Ching Hua and then Tzechoufu in Shansi. Work had actually started in 1900 but then got delayed by the Boxer troubles. When work restarted in 1902 the route was re-aligned from Taokou to Pashan, a distance of 92 miles and completed in 1905. From Pashan it was extended to Tzechoufu. When the rival syndicate B&CC were granted a concession for the Tientsin-Pukow line this created a conflict of interests and the two syndicates thereafter agreed to joint participation in any future railway contracts north of the Yangtsze. The Chinese Government, in realizing their error of granting such an indefinite agreement, planned to purchase the line from the Pekin Syndicate and signed a loan agreement for this in July 1905. The railway, although then technically owned by the Chinese Government, was still to be operated by the Syndicate until the loan could be paid off, 1916 being the earliest date for this option. 29 photographs.

Fukien Railways, this railway was planned to link Amoy with with the province of Kwangtung. The line from Amoy to Changchow, a distance of 33 miles had been surveyed and construction had just begun with about 4 miles of track completed. The terminus at Amoy was located on the mainland at Sung Su about 2 miles from the City. The authorized capital was $6 million of which $1 million had been raised from Chinese shareholders. The railway engineers were all foreign educated Chinese. Rails had been ordered from the Hanyang Iron Works and the sleepers Japanese. One American and one German locomotive had been purchased. 14 photographs and 1 small sketch map.

Canton-Amoy Railway, this railway had not progressed beyond the planning stage and there were problems about acquiring land at reasonable prices.

Shanghai-Nanking Railway, an editorial note precedes the main article on this railway which is by A. H. Collinson, Chief Engineer of the SNR during construction. The editor comments on the extensive criticism directed against "extravagant" use of the loan funds. The B&CC who had acquired the concession for the line had according to the Chinese failed to build the railway economically and had been deliberately extravagant in order to increase the size of the loan and to earn higher commissions on materials purchased. There were two sides to this dispute and an enquiry was being conducted to investigate expenditures. Notwithstanding the results of an

enquiry China had already refused to have any more dealings with the B&CC syndicate and would now only deal with the Hongkong & Shanghai Banking Corp. The railway was currently running at a deficit that had to be met by the Chinese Government and there was little prospect of this situation improving. Freight carried on the railway was subject to "likin" (tax) and this discouraged shippers from sending their cargoes by rail. To make matters worse the rate of likin had been reduced on other forms of transport by the Chinese Government to specifically dissuade rail use. This was to prevent the railway from making a profit of which the syndicate would be entitled to 20%. There was in effect a total stalemate over the issue and China hoped that this would hasten the surrender of the railway by the syndicate at a fair price. The editor concludes by stating that as with the Pekin Syndicate there was a moral to this situation which British interests might well ponder over. The next part of the article concerns the description of the line and its construction. This article is an exact reproduction of the paper presented by A. H. Collinson to the Institution of Civil Engineers in their Minutes of Proceedings Vol 8 1906-7. (See notes on this above). There are also 31 photographs in this article which do not appear in the I.Mech Proceedings version of Collinson's report. Also 1 sketch map of the route and connections.

Nanking City Railway – From the Terminus of Shanghai-Nanking Railway on the Yangtsze to Nanking City, this line had been built by the provincial government and was known locally as the "Viceroy's Railway" after Viceroy of the Liang Kiang, Tuan Fang, who had organized its construction with local funds. Opened August 26th 1908, this 7½ mile line ran from the Drum Tower in the city to the SNR terminus at Hsia Kuan on the banks of the Yangtsze River. The line had been built under the direction of British engineer, Mr Leeme, and had cost 300,000 Taels. The railway had two American built (Brooks Locomotive Works of Dunkirk N.Y.) locomotives and the passenger cars were former Woosung line rolling stock purchased from the Shanghai-Nanking Railway. Fares for 1st, 2nd and 3rd classes were 60, 30, and 15 cents Mexican or 30,15 & 7½ cents Gold resp. with proportionate reductions for intermediate distances. Includes 7 photographs of the locomotives, rolling stock and line-side locations.

The Tsitsihar Light Railway, the Russian built and operated CER ran some 18 miles to the north of Tsitsihar, the provincial capital of Heilungkiang. Since the Russians had not taken the line to Tsitsihar the Chinese decided they would build a line to connect with the CER to improve on the appalling road conditions. The Governor of the province signed a contract with a Tientsin engineering firm called Teige & Schroeter to build the line. The line was built by Mr. W.R.T Tucky to meter gauge, using 30 lb rails. The locomotives were 10 tons, 9" x 12" stroke cylinders supplied by Orenstein & Koppel of Berlin. They could haul 100 tons at 17 mph. The 1st, 2nd & 3rd class carriages had also been fitted with a special saloon for use of the Governor and other high officials.

The 18 mile stretch had recently opened and it was hoped to extend the line later northwards to the important town of Mergen and then later northeast to Aigun via Mono-khe. 10 photographs of the railway, locomotives, rolling stock and of the Governor, Chou Shu Mu.

The Shantung Railway, Germany had acquired the 99 year lease of Kiachow in 1898 following the murder of two German missionaries in the province in 1987. A German squadron took possession of the territory and made demands on the Chinese Government to punish the Governor of Shantung, compensate the families of the victims and pay Germany's costs of occupation. Included was also the right to construct tow railways line in the province. The Chinese gave in practically to all these demands. The article

lists details of the railway convention. The main line was to be from Tsingtau to the port of Kiaochow and thence to Chinanfu via Weihsien. The resulting "Schantung Eisenbahn Gesellschaft" was 412 kilometers long and finished in 1904. The track was standard gauge and laid on metal sleepers. No fast speeds were employed and the journey from end to end took 13 hours including stops. In 1906 the stock included 30 locomotives, 107 passenger & baggage cars and 720 freight wagons and in the same year 846,000 passengers & 381,000 tons of freight were carried. In 1908 the railway had suffered an accident at the Peishaho bridge when a derailment resulted in the bridge collapse and serious injuries to 8 people with 4 cars burned. By 1908 the rolling stock had increased to 35 locomotives including 17 "double engines", 4 tender engines, 7 freight engines and 4 reserve engines. The number of carriages and wagons had also increased. 11 photographs of stations, trains and line-side scenes.

The South Manchurian Railway, The SMR between Kuangchengtzu (at Changchun), Dalny and Port Arthur had been transferred by Russia to Japan at the close of the Russo-Japanese War. The new company held its first meeting in August 1906 and set about reorganizing the railway and redeveloping it with a capital injection of ¥200,000,000. In addition to running the railway the company was authorized to engage in mining (especially the Yentai and Fushun collieries), marine transport, electric works, sale of goods, warehousing, construction and administration of land and houses, make provisions for education, health and engineering work on land belonging to the railway and collect fees from inhabitants for the use of railway land. There had been many complaints about the line when it was first under military control and prior to the regauging of the track to standard gauge. The latter had been accomplished in only 1½ years and the main line to Suchiatun from Dalny was now being double-tracked to handle the coal output from Fushun. The Antung-Mukden branch line was at present losing money but it was hoped that this situation would soon change as the mineral wealth of the area was exploited. The railway company was also planning a new line from Changchun (Kuangchengtzu) to Kurin. The article includes a list of Japanese railway officials, a sketch map of the railway, a comparative set of financial figures for the years 1907 and 1908, a list of fares, traveling times, arrival and departure times for international expresses via the SMR & CER and 25 photographs of officials, stations, buildings, locomotive, and rolling stock.

The Antung-Mukden Railway, this railway was the hurriedly constrcted product of the Japanese war with Russia, having been built by the Japanese military to get supplies to their forces. More recently the railway had become part of the SMR and in spite of Chinese opposition had been reconstructed to higher standards. Eventually, under strong pressure, China and Japan came to an agreement over the line with its management and operation being the subject of an 18 year agreement after which China would purchase the line. Even Britain and USA had remained silent over Japan's overbearing attitude and this had particularly strained British-Chinese relations. The railway was initially constructed begun by the Japanese Engineering Corps in May 1905 and went to Shichiatzu, a point about 30 miles S.E of Mukden. In August 1906 the Japanese military decided to extend it to Mukden and this section was completed in only 1½ months. More recently (December 1906) the line, having passed under the control of the SMR, had been upgraded with some realignment through the maintainous sections. The gauge was 2ft 6 in. and the 150* locomotives had been supplied by Baldwin 100 of these being 16 tons and remainder 11 tons. The line was opened to general traffic in August 1908. The entire journey took about two days with an over-night stop at Tsaohohu (Sokako) because night trains were considered unsafe.

The SMR were now planning to upgrade the line further to standard gauge and the route would remain substantially unchanged at 170 miles. This was expected to cost ¥23,000,000. A railway bridge across the Yalu was also planned which would permit through trains on standard gauge to Fusan.(* this number seems unrealistically high for a line of this length with only two through trains a day and is possibly an error). 4 photographs.

Chinese Eastern Railway, The CER, as originally projected reached Vladivostock by following the Amur River within Russian territory. The route across Chinese Manchuria shortened the distance by 500 miles. The originaly planned route actually started in Vladivostock in May 1891 and during its construction the war between Japan and China gave the Russians the opportunity to interfere and stop the alienation of Chinese territory to Japan. In return the Russians were granted the concession to build the CER across Manchuria to connect the Siberian and Ussuri systems. The contract was signed between China and the Russo-China Bank which was an offshoot of the Russian Finance Department. This agreement, signed on September 8 1896 provided for a 5 ft gauge line to be built and operated for 80 years, although China could purchase after 36 years. Construction started in the spring of 1897, the same year that the railway city of Harbin was founded. The following year Russia also obtained a 25 year lease for the Liaotung peninsula with permission to build a railway from Harbin to Port Arthur. Construction was pushed very rapidly and was almost completed when the Boxer outbreak when much of the work was destroyed. Following the suppression of the uprising work on the railway continued and by autumn 1901 the whole line was completed having cost an estimated 300,000,000 Roubles excluding another 250,000,000 Roubles spent building Port Arthur. Harbin grew rapidly and became a Mecca for free spending businessmen, not to mention the thousands of railway employees and immense armies of the Czar that passed through who together kept the economy bubbling. At its height there were 4 breweries, 8 vodka distilleries and no less than 26 music halls with thousands of women catering to the needs of the soldiers passing through. It became the most expensive place to live in Asia and land prices rocketed. All this came to a crashing halt when Russia had its eye blackened by the Japanese in the Russo-Japanese war of 1905. The resulting Treaty of Portsmouth gave Japan the Liaotung peninsula and the CER line to Changchun. Harbin's prosperity declined rapidly and many of the enterprises doing so weel before the war had to close down. The railway administration, however, showed no signs of retrenchment and the headquarters still swarmed with thousands of employees, keeping living costs at double those of Shanghai. The railway was losing money badly and the prospects did not appear good. Apart from the competition of the SMR the railway would face even a greater threat from the proposed extension of the Chinese Peking-Kalgan Railway to Kiachta. It remained to be seen if current rumours that the Russians were willing to sell the line back to the Chinese came true. 17 photographs of senior railway officials and other railway scenes and 1 sketch map of the route.

Chinchowfu-Tsitsihar Railway, preliminary steps were in hand for the building, with British and American financial help, the Imperial Railways of North China extension from Chinchowfu through eastern Mongolia to Tsitsihar, the capital of Heilingkiang province. China was determined to accomplish this in spite of possible Japanese objections. Strategically the line would be a menace to Japan's position in Manchuria and the possibility of another confrontation between Japan and Russia and/or China was ever present in this region. 4 small photographs of CER and SMR not directly related to this article.

The Yunnan Railway, the article repeats much of the information reported in the August 1906 edition. The gradient profile between Yunnanfu and Laokay is a repeat as is the route sketch map. The local natives could not be enticed into working in the fever stricken Nam-ti River valley which had taken many, it was said, thousands of lives. Italians were now doing most of the work. The enormous tunneling problems had cost far over the original estimates and the French concessionaire company had collapsed with debt. The French Government had since come to the aid of the 535 mile long meter gauge line. France's ambitions of extending the line still further north were not likely to gain China's approval unless France surrendered its exclusive rights and hands the line to Chinese control. Recently there had been reports of the French sending in military spies and smuggling in arms and this was causing China great concern. The French were increasing their army in Indo-China much to China's dismay and China was also at present trying to get France to agree to the Yunnan railway being guarded by Chinese police and not French military personnel. The situation showed all the signs of seeding yet more trouble over commercial concessions.

Imperial Peking-Hankow Railway, this was Belgium's most important enterprise in China. The 1,200 kilometer line with the future Hankow-Canton line would form the Great Central Railway of China to which all other lines would connect. In 1889, Governor of Canton, Chang Chih Tung, after advocating the building of trunks lines in China to the Throne, was sent to Wuchang as Viceroy of the Two Hu's with the special mission of building the southern portion of the Peking-Hankow line. Chang failed in this mission because unable to raise the necessary funds in China to do so. In 1896 he and Viceroy Li Hung Chang of Pechili were able to convince Peking that there was no prospect of the project being accomplished without foreign assistance and authority was then issued to grant a foreign concession. There was keen competition to secure this concession by the British, Americans and Belgians. In late 1896 Taotai Sheng Kung Pao was made Director-General of the proposed line. Sheng awarded the concession to the Belgians although later the French elbowed their way into the relationship and participated with the Belgians in a joint company, the "Societe d'etudes de chemins de fer en Chine". This company, despite British objections, was formally awarded the concession in a contract signed by Sheng in June 1897. In March 1899 a loan was raised in Paris and Brussels which was called the 5% Chinese Loan of 1898. This loan was to be amortized over 20 years but the Chinese had right to repay it any time after 1907. The financial arrangements for the loan were placed under the Russo-Chinese bank which served to fuel (particularly British) suspicions that France and Russia were participating and seeking to extend their influence using the Belgians as a front. While these negotiations had been proceeding Chang Chih Tung had already ordered the preliminary surveys by Imperial Railways of North China. The latter had already started building the line in 1896 from Lukouchiao south to Paotingfu under the direction of Kinder and T.J. Bourne. In 1899 Belgian Chief Engineer M. Jean Jadot took over responsibility for the line and rapidly pushed its completion, the last part being the Yellow River Bridge, commenced in 1904 and opened to traffic in 1905. In 1906 the gross returns from the line had amounted to $3,945,760 with net profit about $1000,000. In 1907 profits had reached almost $2000,000. Negotiations also took place for a new loan for the Chinese Government to take over the railway and in January 1909 the management of the line passed to Chinese authorities. The standard gauge track was reported to be well made using 37.6 kilogram per meter rail and the trains were running at European speeds and standards.

Fares were set at 9 cents, 6 cents and 3 cents per kilometer respectively for 1st, 2nd and 3rd classes, the latter being in open carriages.

The Shensi Railway, it was proposed to construct a line in this province from Tingkuan to Hsiangfu, the Shensi provincial capital. There was, however, much local ignorance and suspicion about the railway and little had been achieved. The local officials were now contemplating building a short trial line using horses or mules until the Peinlo line was brought up to Tungkwan. The central authorities were however keen on linking Hsianfu with the PeiHan Railway and a foreign loan would perhaps be floated to achieve this.

Imperial Chinese Tientsin-Pukow Railway – Northern Section, the original concession for this railway from Tientsin to Chinkiang had been granted to Yung Wing with permission for him to seek foreign aid. Yang obtained a loan of 27.5 million dollars but the German occupation of Shantung interfered with the plans because of the need for the line to pass through Germany's new area of influence and the deal was cancelled. In 1898 Britain and Germany came to agreement over railway policy in China. The Germans would confine themselves to the Hoang Ho (Yellow) River Valley and the British to the Yangtze. A formula was then put together for the railway to be built and operated in two sections, the Germans building the northern part with the British building the southern portion from the boundary of Shantung to the terminus at Chinkiang. The Shanghai-Nanking Railway, however, clashed with this plan and it was therefore decided to alter the southern terminus to Pukow, a point opposite Nanking on the Yangtze. Negotiations were completed for this in May 1899 with the Deutsch-Asiatische Bank representing German interests and the British and Chinese Corp. the British. The Boxer troubles suspended any further progress and it was not until January 1908 that the project started again. Loan agreements were drawn up and signed and these were more favourable to China than many earlier agreements. The control of the line was to be in Chinese hands although German and British engineers were to oversee their respective ares of construction. Supplies were also to be purchased on terms favourable to China with modern accounting and supervisory methods preventing opportunities for corruption. The Germans had taken the credit for imposing these favourable terms for China whilst the reluctant British considered that the terms provided insufficient safeguards for protecting investors. Work on the German Northern section commenced in June 1908 under Viceroy of Chihli, Lu Hai Huan who had been appointed Director-General of the two sections with Taotai Li Te Shun (Alfred Li) Managing-Director of the Northern Section and Taotai K.S. Low M.D. of the Southern Section. Chief Engineer of the N.Section was Mr. Dortmuller with T.W.T. Tuckey (with 20 years experience in I.R.N.C.) in a similar position for the S. Section. Work on the Northern section proceeded rapidly. The M.D. Li Te Shun had been specially picked, as he was German speaking, however his career came to grief when he was accused of corruption involving the purchase of supplies, land and other misappropriations. He was also accused of having acted in collusion with the German engineers although the latter strongly denied it. The affair also brought down his superior, Lu Hai Huan, who although not involved was held accountable for poor supervision. In spite of these setbacks work had gone ahead and the greatest problem was now the bridging of the Yellow River above Tsinanfu, expected to cost 2000,000 Taels. The whole line was expected to be completed within three years, some 600 years after the building of the Grand Canal, alongside which much of the line would travel.

The Peinlo Railway, Kaifengfu-Honanfu or Kaifeng-Lu-Yung Railway, the author uses unusual spellings for this title. The railway's name is normally the "Pienlo" and not "Peinlo" line which runs from the capital of Honan province,

Kaifengfu (old name Pienching – hence the “Pien” in Pienlo) to Honanfu (previously known [and now once again] as Loyang –hence the “Lo” in Pienlo). The contract for its construction had been signed by Sheng Kung Pao, Director-General of IRNC, in Shanghai in 1904 and awarded to La Compagnie Generale de Chemins de Fer et de Tramways en Chine represented by Monsieur Rouffart. For this purpose a loan of 25,000,000 francs was raised known as the Chinese Government 5% Gold Foreign Loan of 1903. The railway was built in four sections: first section Kaifeng-Chengchow, second section to Szechui near the Yellow River, third section from Szechui to Heishikwan – the most difficult because of mountains and the fourth section from Heishikwan and Honanfu. The railway was later to be extended to westwards to Shenchow, Tungkwan and then Hsianfu when funds could be arranged.

The Chen-Tai or Chentingfu-Taiyuanfu Railway, this railway branching off the Peking-Hankow line at a small station called Chentow, several miles south of Chentingfu traverses the hilly country to the west terminating at Taiyuanfu, the provicial capital of Shansi. The official Chinese name for the line was the Chen-Tai Railway whilst the French persisted in calling it “Ligne du Chanse” – the Shansi Railway. The line was 242 kilometers in length and at its highest point reached 3,500 feet above sea level. The line had 25 stations. The survey for the line had first been completed by French engineer M. Hivonnait in 1897 acting for Comptoir d’Escompte and the Russo-Chinese Bank, the latter being granted a concession for its construction in May 1898 but later the original estimates and loan were found to be insufficient. Later the concession went to Societe d’Etudes de Chemins de Fer en Chine, the Belkgian holding company, and engineers finally commenced work in 1903. The first rails were laid in 1905 and the whole lined opened to through traffic in October 1907. The line was meter gauge, using 60 lb rail, and this prevented a junction with the main line. Freight and passengers had therefore to transfer at Chentow. The engineers in charge of the construction were Georges Espanet, Monsieur Millorat and Jacques de Lapeyriere.

Canton-Hankow Railway – Yueh-Han Railway, the original concession for this line had been granted to the American-China Development Company under a contract signed in April 1898 by Wu Ting Fang acting as the representative of Sheng Kung Pao, Director-General of Railways. This American syndicate had been organized by a U.S. Senator, Calvin Brice, with William Barclay Parsons appointed as Chief Engineer who conducted the first survey in 1898. The line was to be about 750 miles in length with 150 miles of branches, the most important of which were the Canton-Samshui line, which was the first section to be constructed having been in operation for 5 years at the date of the article. Thre was also the 60 mile Ping Hsiang to Chu Chou coal line. Very little of the main line had been built. On the Canton-Samshui line which passed through Fatshan, only temporary stations had been built apart from at Fatshan where a “handsome” two-storey brick station had been erected. A repair shop had also been built at Shek Wei Tong and this was under the direction of J Lind.The article next describes the engineering difficulties faced and the costs of construction of this branch. The rolling stock was all of American origin and 8 second-hand locomotives from the Manhattan Elevated Railroad had been purchased for $3,000 each to be used for construction and temporary purposes. 20 forty ton flat cars had also been purchased and some of these had been converted to passenger carriages. Construction of the main line had commenced in 1904 but had soon been suspended with only 12 miles from Canton to Ko Tong completed (less 6 miles of rails). Money had been running out and was slow in coming in. The article then goes on to describe how (foreign) engineers should treat

Chinese workers. If they ("Chinamen") were treated with patience and fairness no living men would work so so well cheerfully and for as little money. When the Canton-Samshui line was opened all the engine drivers had been foreign with Chinese firemen. Within a year all the native firemen had been promoted to drivers with only one foreigner remaining as a driver expert and supervisor. The foreign crews of the steam pile drivers were similarly replaced by Chinese within a short period. The history of the American syndicate was considered an "old story". Brice had died and the group had lost the driving force. Belgians
had bought most of the shares and gained control of the company, replacing the American engineers who had originally worked on the line. China had objected to this situation but finally after months of bickering between the three nations China bought out the concession rights with a loan raised by the Hong Kong Government. Since that date China had struggled continuously with little success to raise the necessary funds to continue building the line. The construction had subsequently divided into three sections: the Kwangtung section to be built and financed by Cantonese, and the Hunan and Hupeh sections by the Hunan and Hupeh gentry respectively. The Cantonese section had been in turmoil although in the last two years while under control of Sir Liang Cheng Tung some progress had been made with some 100 miles completed. Nothing had been accomplished in the other two provinces. More recently the Chinese Government, realizing that it could not complete the line without foreign help. Negotiations with the British and Chinese Corp. had begun but then broken down with numerous charges and counter-charges of bad faith between the British, French and Germans, not to mention the Chinese side. The latest situation was that a loan was being put together (not yet signed) by a combination of the foreign banks, including the Americans with the French and British supplying engineers for the Canton-Hankow line and German and Americans on the joining Hankow-Szechuan line. 17 photographs of mainly the Canton-Samshui line.

Chuchow-Pinghsiang Railway, this line had been surveyed by American engineer, W. M. Parsons, in 1898 at the same time as the Canton-Hankow Railway. Sheng Kung Pao had agreed that the line could be incorporated in the latter as a branch line for carrying coal from the An-Yuen mines at Pinghsiang to Chuchow for transhipment to the steel works at Hankow. Construction had started in 1899 under the supervision of American engineer Capt. Rich and later another American, McCalla. Still later a Chinese engineer Taotai K.S. Low joined the team. Low specialized in bridge work and solved the serious engineering problems involved in the construction of a bridge over the Lu Kiang River near Liling city. The cofferdams for the piers of this bridge had previously been carried away by floodwaters on several occasions whilst under foreign supervision but K.S. Low had succeeded in dealing with the problem. The railway was in essence a Chinese financed and built standard gauge line although foreign construction engineers had been engaged by Sheng. The 70 mile standard gauge line cost about £614,600 to build, only £7,000 per mile. This was an object lesson for Westerners showing that the Chinese were capable of building their own lines at less cost than those built by foreign firms. The article then continues with a description of the coal mines at An-Yuen which were run under German supervision. There was in fact a colony of 24 Germans living at the mines, which also ran a college of engineering and mining as well as a language school. There were also 2 doctors. Includes 4 photographs of bridges.

Imperial Peking-Kalgan Railway, this article starts by introducing the Chinese Chief Engineer and other Chinese engineers who had built the railway. In the

late 1870's a group of Chinese students had been sent to the United States to be educated. They were recalled from China by the government before they had completed their studies because conservatives at Court considered they were learning ideas prejudicial to the Confucian order. Amongst these students was Chan Tien-Yu who had elected to study civil engineering at Yale University where he was known as "Jimmy" . Jeme had actually graduated before he returned to China and had been engaged on post-graduate studies when ordered to return. After a further period of study and work in England he returned to China to work an assistant engineer for IRNC under Kinder, who appreciating his talent promoted him to Resident Engineer of a section. When China decided to build the Peking-Kalgan Railway itself Jeme Tien Yu was the natural choice of the Chinese Government much to the scorn of many foreign engineers who considered that no Chinese was capable of the task of pushing a railway through the Nankow Pass with a rise of 1,800 feet without foreign help. The article includes a translation of an article extracted from the "World's Chinese Students' Journal" published in Shanghai. This describes the building of the railway from the Chinese viewpoint. Construction of the 130 mile-long line had been divided into four divisions with the first 32 mile section being from Liutsun near Fengtai (on the Peking Tientsin Railway) to Nankow at the mouth of the pass. Construction had started in October 1905 with the first section being formally opened on 30th September 1906. Rolling stock had been purchased from IRNC's workshops at Tongshan except for the special Mallet locomotives needed to push trains up through the steep pass, which had been ordered from England. The whole line was expected to be completed in 1910. The line was being built to the highest standards and very economically for a mountain railway. Costs had been reduced by avoiding the high costs of foreign engineers or the need to paid commissions to foreign concessaires. 25 photographs of Chinese railway officials (including Jeme Tien yu), stations, tunnels & railway scenes near the Great Wall.

Tientsin-Pukow Railway (Southern Section), whilst progress on the Northern Section of this railway had been good the same could not be said about the Sothern Section. There had been great antagonism between the Chinese Managing Director, Taotai K.S. Low, and the British Chief Engineer T.W. Tuckey. The latter had been attempting to use his interpretation of the loan agreement to argue that he had full and equal authority to the Managing Director with regard to the emplyment of foreign staff and control of the budget and spending of funds. Tuckey's contention was of course supported by the British and Chinese Corp who ensured that their viewpoint was widely aired in the English press both in London and in Shanghai. The Chinese on the other hand were not prepared to allow the Managing Director to be subordinated to Tuckey and were equally determined to have control over expenditure, pointing to the extravagancies incurred during the building of the Shanghai-Nanking Railway. Matters had been made worse by Tuckey going over the head of K.S. Low to the British Minister and head of the British & Chinese Corp. thereby increasing the ill-feeling between the two men. The author considered Taotai Low's stand perfectly justifiable in order to prevent corruption which had occurred on a huge scale at Tientsin in relation to the Northern Section. K.S. Low had also ensured that tenders for the supply of materials had been honestly handled without regard to favoured parties. Had the control of expenditure been in Tuckey's hands it was almost inevitable, that only British suppliers, favoured by Tuckey's employer (British & Chinese Corp) would have gained the contracts and probably at higher prices. In spite of these strained relations work was in fact now proceeding. With the completion of the survey the railway had been divided into four sections with

divisional engineers appointed and earthworks started at various points. At the Yangtse deep water terminus, wharves and warehouses had been erected and 2½ miles of temporary track laid with a Baldwin tank locomotive in operation. Work on the first section was well in hand and the Chief Engineer had suggested that the whole 233½ mile line would be finished in 2½ years. There would be 198 bridges or openings, the most important being an 8 x 200 ft spans over the Haai Ho, 62 x 30 ft spans across the Fet Ho, 8 x 50 ft spans across the Hsieh Ho and 1 x 200 ft and 14 x 30 ft spans across the Huee Ho. There were also bridges in the third district across 94 openings. There would be 31 stations and passing loops which are named in the article together with their mileages. Also included are two pages of detailed tender lists for the supply of wagons and locomotives. 48 companies had submitted tenders for the supply of the wagons and 41 companies for the locomotives. In respect of the latter 6 locomotives were ordered from the North British Locomotive Co. of Glasgow (through Jardine Matheson & Co) and 2 Baldwin locomotives through Arnhold, Karberg & Co. Includes 8 photographs of wagons and construction scenes and 1 sketch map of the route.

Kowloon-Canton Railway - British Section, this project would establish a connection with the important Peking-Canton trunk line thereby preserving Hong Kong's status as a distribution center for South China. This position had been under potential threat when the Canton-Hankow Railway concession had first been awarded to the American syndicate who then proposed building new deep water port near Canton as the southern terminus of the railway. A concession was therefore obtained in 1898 by the British & Chinese Corp. to build a line from Canton to Kowloon. The concession remained unused and inactive for a number of years until the business community felt roused to push the issue in 1905. The Hong Kong Government then led the way by commencing a survey and start on the project at the Kowloon end. The most difficult features were the cuttings and tunnel work, the longest being the 7,256 ft. long Beacon Hill tunnel through almost solid granite. Labour had to be imported from India because the local natives were unwilling to work underground. Finally,however, some coolies who had returned from South Africa replaced the Indians. A number of the smaller tunnels were contracted out to Italian contractors. The cost of construction had greatly exceeded the original estimates and the Governor of Hong Kong had to put up a spirited defence for the cost overruns. The current prospects were for the line to be completed by May 1910. 19 photographs of construction scenes.

Canton-Kowloon Railway - Chinese Section, the article contains a report submitted in April 1909 by Chief Engineer, Frank Grove. The final agreement for the building of this section had been signed between the Chinese Government and the British & Chinese Corp. on 7 March 1907. H.E. Wei Han had been appointed Managing Director who requested the B & CC to supply the Chief Engineer and an adequate foreign staff. Surveys had commenced August 1907. The Canton terminal had been established at Taishatow, being conveniently located at the end of a roadway that would pass along the entire water frontage of Canton. A connection with the Yueh-Han railway would later be made to the north of the city. The entire line from Taishatow to the frontier at Samchun would be 89 miles which together with the 22 mile British Section made a total of 111 miles from Canton to Kowloon. Construction proper started in July 1908 but land officers had encountered many difficulties in acquiring the necessary land and especially great care had to be taken to avoid native disturbances over the removal of graves. The depot for the line was to be located at Tung Shang, a mile from the terminus and at Shekwaitong a line would connect with the Hankow Railway. The Canton

station building is next described in considerable detail, the architects being Purnell and Paget. Construction of the building had commenced in January 1909 with completion due in March 1910. 1 sketch map of Canton showing the proposed new water front road and the position of the railway terminus.
Map of China's Railways, this untitled map of China shows all the railways built and projected up to the date of the article.
China's Foreign Railway Agreements The full texts of the various international agreements and treaties for the construction, financing and operation of railways within China. These are under the headings: Great Britain; Great Britain and Germany; Germany-China; France; Belgium; Russia and Japan

December 1909
Advertisement for North British Locomotive Co. Ltd represented by Sole Agents for China, Jardine Matheson & Co Ltd. with offices in Hongkong Shanghai and Tientsin, This full page advertisement bears a photograph of the Mallet type engine supplied for the Peking-Kalgan Line and a 2-6-0 tender engine supplied for the Tientsin-Pukow Railway Southern Section.
Tonkin-Yunnanfu Railway Extension, a report that the completion of the French railway to Yunnanfu had stimulated interest in an extension to Luchow in Szechuan. A survey had already been carried out. Such a line would effect Shanghai trade via the Yangtsze by giving an outlet for Szechuan goods via Haiphong. The construction of such a line,however, would have enormous engineering difficulties because the mountainous territory it would traverse and it would be very expensive.
Manchurian Railway Construction, a section of 25 miles of the reconstructed Antung-Mukden line had been opened on 20th November as far as Shihchaotic. Construction of the Kirin-Chnagchun line was also expected to begin in the spring and the doubling of the entire SMR line would soon be completed.
Peking-Kalgan Extension, with the completion of this line the prospects for the extension into Mongolia looked brighter. The previous year a survey had been done for the 260 mile route from Kalgan to Ho-Kou on the Yellow River.
Changsha-ChuCheo Railway, this section was now under construction with 2 miles completed. This section would eventually form part of the Canton-Hankow line.
Tientsin-Pukow (Northern Section) the Hon. Chu Cheng Chi had been appointed Acting General Manager until the vacancy following the scandal was filled permanently.
Szechuan-Hankow Railway, work on the Ichang-Wanhsien section had started 8th November and a number of students from the Chengtu railway college had beeen engaged.
The Tientsin Terminus of the Tientsin-Pukow Line, it had been decided to locate the station near Hsiku at the north end of the city. This also provided a station at South Gate.
South Manchurian Railway's Half Year, passenger & freight receipts for the six months ending September were ¥5,850,177, an increase of ¥1,477,420? over the previous corresponding period.
Canton-Hankow Construction, the Liangtan-Pikiangkou section of the line opened for traffic in October, adding 6 miles to the 45 operating from Canton. Two trains daily were scheduled.
New Hupeh Railway Proposed, the Viceroy of the Hukiang provinces had proposed a new 250 kilometer line from Siang Yang fu on the Han River with Kuang-Shui on the Peking-Hankow Line. The province of Hupeh had pledged half the capital.

The Chin-Hsu Railway, the construction of this line from Hsuchowfu on the Tientsin-Pukow line with Kwachow, a point opposite Chekiang on the Shanghai-Nanking line, had commenced. The line was to be built with Chinese capital.
South Manchurian Sleeping Cars, 2 sleeping cars built on Pullman pattern but with Wagon-Lits sleeping arrangements would soon be turned out by the SMR's shops at Dairen. Each car could accommodate 30 passengers.
Nanking-Wuhu Railway, the Kiangsu council were to raise funds for the construction of this line from among merchants and gentry of Kiangsu and Anhui.
Junction of the Shanghai-Nanking & Kashing Railways Approved, Peking had approved this junction, which would begin at Chenju and pass Chiangchiao, Peisingching , Tsaochoching to Meichialung.

January 1910
Port Arthur-Dalny Railway, the line had been ceded to Japan but China retained civil administration in the SMR district.
Fokien Railway Construction, 500,000 Taels had been borrowed by the Amoy-Swatow Railway and construction would be resumed.
Kirin-Changchun Railway, the survey had begun in December (1909) and Chief Engineer Margario was planning to carry on the survey from both ends with construction beginning in July. The entire line was planned to be open by spring 1912.
Antung-Mukden Railway Construction, the Fuhklinglin tunnel was progressing satisfactorily. The tunnel when completed would be 74 chains.
Proposed Railway Lottery, the Railway Board had proposed holding lotteries to raise funds for the building of railways. Imperial sanction had not yet been secured.
Canton-Hankow Railway, work on the various sections was progressing well with the Canton-Yuntam section in operation plus another 15 miles soon to be added to Taimiao. The survey to the Honan border was complete and work had commenced at Lokchong.
Dairen-Laohutan Light Railway, the promoters had asked for a franchise and proposed to spend ¥50,000 to install a line. Cars carrying 30 passenger would be pulled by 4 or 5 10 ton locomotives.
Ichang-Szechuan Railway, the first sod had been turned on this line indicating that the local inhabitants of Hupeh and Szechuan intended to build the line without foreign assistance.
The Yunnan Railway, the Governor-General of Indo-Chine had announced that through traffic between Yunnanfu and Tonkin would commence on 1st February. Previous announcements of completion of the line had ignored several breaks in the line.
Chefoo-Weihsien Railway, capital of 5,000,000 Taels had been subscribed by local merchants for constructing the line.
Mukden Railway Junction, negotiations were in hand for the extension of the Chinese Railway from Hsinmintun into the city of Mukden as far as the Western Gate, where it would connect with Antung-Mukden line.
Chinese Eastern Railway, the line had inaugurated 1st and 2nd class sleeping cars on a thrice weekly Trans Siberian service from Irkutsk and Changchun via Harbin.
Peking-Hankow Receipts receipts had reached 1,170,000 Taels for the month of November.
Yalu Railway Bridge, work was progressing well with one third of the crossing prepared for the superstructure.

Feeders for the Shanghai-Nanking Railway, increasing traffic on this line to put in on a paying basis would require feeder lines.
Yunnan-Kweichow Railway, this line would probably be constructed with funds provided by Peking and the local merchants.
State Car for the Manchurian Railway, an order had been placed in England for a state car which would arrive in April. It would be equipped with two private rooms, sleeping compartments & bath etc.
Kanchengtzu Connections, arrangements had been concluded for the SMR to have a switch connecting with the freight depot on the CER.
Kalgan-Kurun Line, the project had been postponed on account of its enormous cost.
Hunan Section of the Canton –Hankow Railway, the Governor of Hunan had advised Peking that the people of the province were prepared to fund the line.
Cars for the Antung-Mukden Line, the SMR were turning out 60 2-ton cars for increased demand for cars on the line to add to 500 5-ton and 200 2-ton already in use.
Yentai-Branch Line, the steel track had been laid connecting the station with with the colliery but the ballasting was only half finished.
Kiaochow-Tsinchou Railway, the Governor of Shantung had proposed raising a loan for the line.
Kweilin-Nanning Project A report that Belgian & British engineers were surveying a route between Liuchow and Pingchou.

February 1910
Advertisement for Woosung Car Shops of the Shanghai-Nanking Railway, these shops were fully equipped with the most modern plant for the construction of car bodies and setting up of car parts ordered from abroad. Under Managing Director: Taotai Chung Mun Yew and Gen Manager A.W.U. Pope. Includes 2 photographs of the shops.
Shanghai-Nanking Railway- Half Year Budget Estimate, A full list of the estimated and actual financial figures for the six months ending June 1910.
Szechuan-Tibet Railway, Peking was again reported to be taking a great interest in building this line.
Tientsin-Pukow Railway, the Northern Section had been completed to Chuang Chow for construction trains.
Kirin-Changchun, the survey for this line had been started from both ends.
Lungchou-Nanning Railway, a survey for this proposed line had been ordered following an application from the French Minister for permission to construct the line.
Dairen-Lachutan Beach Railway, a company had proposed a line between these two points.
South Manchurian Debentures, It was proposed to issue debentures to the value of a further ¥40,000,000.
Chinchow-Aigun Railway, it was reported that a proposal from Viceroy His Liang to build this 750 mile railway had been approved. The concession for the line was to go to an American company but sub-let to British Company Pauling & Co. The line would cross the CER at Tsitsihar and the southern terminus would be a station of the Peking-Mukden line. The cost was estimated to be $40,000,000.
Shanghai-Nanking Railway- Shanghai Hospital, this 4-storey hospital for railway employees was opened January 21st at 132 Range Road convenient to the railway station. There were also hospitals at Chinkiang, Quinan, and Soochow.
Shanghai-Hangchow-Ningpo Railway, there was a movement for this railway to be amalgamated with the Shanghai-Nanking Railway.

Railway Materials Duty Free, Imperial sanction had been given for duty-free materials used for the building of the Kirin-Kuangchengtze and Kalgan-Sujian Railways for a period of three years.
Peking-Kalgan Extension, it had been decided to extend this line to Swe Yuan Cheng.
South Manchurian Freight Traffic, total freight earnings for December amounted to ¥1,600,000.
Antung-Mukden Land Purchase, over ¥100,000 was to be spent on land purchases for the right of way and stations.
Nanking City Railway Sold, Taotai Chang, a wealthy Kiangning resident, had purchased the system for 450,000 Taels which was needed to meet loan obligations.
Kowloon-Canton Railway, the latest situation was that 30 miles of line outward from Canton would be opened for traffic in March and that a through connection would be established in July.
China's Oustanding Debts A list of oustanding debts on loans contracted for since 1885. Many of these were for railway projects.

March 1910
Chinese Railway Problems – In Her Border Provinces, this edition deals with railways in China's remote border provinces: The Amur Railway (actually Russian territory not Chinese),Mongolian railways,Szechuan-Tibet railway project, the Yunnan Railway and projected extensions and Kwangsi railways. The proposed Russian Amur Railway, which was to be 1,326 miles long and cost $150,000 per mile was according to Russian sources proposed for economic benefit but other western nations believed that the railway could only have been proposed for strategic reasons, the enemy being first Japan and China second. The fight for domination of Manchuria was definitely not over. Includes photographs of Vladivostock, Changchun and Amur towns and river scenes. Next is an article on Railways in Mongolia- China's Ambitious Plans to Preserve and Develop this Vast Territory, starting with Russia's desire for territorial expansion or, if not control then, influence in Mongolia the Russian proposed Kalgan to Uliasutai, Urumtsi to Urga and Ili to Lanchow railways are discussed. China, however, had different ideas and having completed the Peking-Kalgan railway was now looking to extend this first to Suiyuan via Tatungfu and Sopingfu under the direction of Jeme Tien Yu with plans for a further extension to Urga, 600 miles across the Mongolian desert. This "Trans-Mongolian Railway" from Kalgan to Urga and then Kiachta had first been a Russian conception and although China was determined to build it herself, Russia was still pressing to participate. The Central Asian project was also another dream of China with the line from Lanchow to Ili to be built after the Pienlo line had first been extended on to Tungkwan, Sianfu and then Lanchowfu. To reach Ili, however, from Peking would entail a further 2,100 miles and huge expenditure of at least $600,000 per year for some 15 years on construction. It was doubtful therefore that this could be accomplished without foreign loans. In addition to these plans China also hoped for other branches of the Peking-Kalgan line to Yin Ching Chow (14 miles from Hwailai station) and Jehol (Chengtefu) about 100 miles from Peking. Finally the Szechuan to Tibet railway project is discussed. The Chinese army had advanced into Tibet on 1st March 1910 forcing the Dailai Lama to flee to India. A railway to the area would therefore be most useful for military purposes. Cost, however, was a major headache with estimates at 30,000,000 Taels. Railway Projects From Burma Into China (also covering the The Yunnan Railways & Kuangsi Railways), this article discusses the question of British intentions of building a railway from Burma into China

through Yunnan province. Britain was concerned about the upper Yangtsze River valley trade being drawn to Hanoi via the French built Yunnan railway and wished to counter French influence in the region. The British idea of a trade route from India to China had in fact first been suggested as earlier as 1831 with further suggestions for a railway in 1867. At the time of writing the article the railway had already reached Lashio, the capital of the Burmese Northern Shan States and an extension into Yunnan to Kunlong appeared to be the next viable step. The extremely mountainous territory, however, posed huge problems and it was doubtful in the line could be constructed all the way to the Yangtzse economically. Also discussed is the desire to exploit Szechuan (spelt "Ssu-Chuan") province's wealth by possibly extending the Burma line into this region. Against this background the French Yunnan Railway to Yunnanfu had just been completed and the French too had further plans afoot for extensions to Szechuan and Kiangsi provinces. China was, however, not at all happy about these plans, being highly suspicious of French territorial expansion plans. China was therefore hoping to build these railways herself if she could raise the necessary funds.

Yin Ching-Chow Branch of the Pekin-Kalgan Railway A report that further extensions were under consideration.

Jehol Branch Railway A report that a Pekin-Jehol branch of the Kalgan railway was also under consideration.

Szechuen-Tibet Railway Project A two-plus page article on this proposal.

Railway Projects From Burma A discussion on the problems of connecting burma with Yunnan by rail.

The Yun-Nan Railway Continuation of the discussion of the scheme to connect with Burma.

The Yunnan Railway A general description of this line as reported in the London Times .

The Kuangsi Railway a text of the convention signed between France and China for this line

Heilengkiang Railway Project Short report pf a proposed light railway in this wheat district between Hailun and Suihwa.

Beacon Hill Tunnel a report that the last brick had been laid in February.

South Manchuria Railway Debentures A float of 40 million Yen had been proposed for increasing rolling stock and extending the Dairen workshops and harbour.

Report of the Chinese Board of Communications, the annual report stated that there were now 2,700 miles of railways in operation within the empire.

Formosian Railway News The consul at Tamsui had reported the railways annual accounts.

Tientsin –Pukow Railway, the local press reported that the Northern Section would be opened as far as the Whangho (Yellow River) by the end of the current year.

The Kiangsu Railway, a shareholders'meeting reported that 580,000 Taels had been raised and a further 2,000,000 would have to be borrowed to complete the line.

Tiehling-Hailunchen Project, the Tiehling Chamber of Commerce had sought approval for a line between these points.

Canton-Hankow Equipment, the consul of Swatow reported the rolling stock on the line consisted of six Moguls of 102 tons with cylinders 19 x 26 inches, four ex Manhattan Elevated Railroad locomotives on construction work and six double-tender tank engines of 50 tons. The Moguls had just appeared on the line having been got ready ready in only 11 days from unpacking. There were 30 American-type passenger coaches, one director's car, 72 American freight cars and 106 China-made freight cars. Three 1st Class compartment

coaches were being built at the Wongsha works, as well as three 2nd Class and four 3rd Class coaches using steel underframes sent from America.
Kirin Railway Protest, the Chinese gentry responsible for the anti-Japanese boycott in Manchuria had ptotested against the joint construction of the Kirin to Chinntao Railway by Japan and China.
Antung-Mukden Railway Construction, difficulties were being experienced with boring the Funchinling 4,880 ft long tunnel due to very hard rock.
The Shantung Railway, service on this line was bing constantly improved. The year before 2 more locomotives had been added as well as assorted cars. A fast train between Tsingtau and Tsinanfu had been running daily since October.

April 1910
Kirin-Changchun Railway A report that the survey for this line would completed by a Japanese engineer and tenders invited for the supply of rails.
British Section of the Kowloon Canton Railway An announcement by the Governor that the cost had exceeded budget.
The Peking-Jehol Railway A report that the project had been postponed.
Kirin-Hoiryong Railway The project connecting Manchuria with Korea had been delayed.
Chinese Railway Loans A report that progress was slow with the Canton-Hankow-Szechuan Loan.
The Szechuan Railroad Loan and the American State Department Further information about stalled American financing for this railway
The Chinchow -Aigun Railway More references to American proposals for financing.

May 1910
The "North Britisher" in the Far East, this article describes how the North British Locomotive Company had established a considerable market for its locomotives in the Far East. Starting in Japan in 1871, when the first Sharp, Stewart & Co. and Dubs & Co locomotives were delivered there and to China in 1887 with the delivery of two narrow gauge locomotives "Speedy Peace" and "Flying Victory". Over 600 locomotives had since been sold to Japan and they had also been the main supplier to Imperial Railways of North China. The article then includes photographs and descriptions of various locomotives which had been supplied recently: 2-6-0 "Mogul" with 17" diameter cylinders and 4-6-0 with 18" cylinders passenger tender-locomotives supplied to IRNC and the latest of four 0-6-6-0 Mallets supplied to IRNC for the Peking-Kalgan Railway where a grade of 1 in 30 for 12 miles had to be climbed. For the Canton-Kowloon and Tientsin-Pukow a more powerful class of Mogul with 19" cylinders were currently under construction. Also photos and descriptions of three Good, Mixed Traffic and Tank engines delivered for the Shanghai-Nanking Railway as well as descriptions of engines for Japan and the Manila Railroad Company.
Types of Locomotives in Operation on the Imperial Pekin-Kalgan Railway, this page contains four photographs of locomotives used on this line: a North British Mallet, a Baldwin Saddle Tank, and tender locomotives built by North British and IRNC Tongshan works.
Baldwin Locomotives for the Tientsin-Pukow Railway, this article describes two standard gauge
Mogul "Class 8-32" locomotives delivered by Baldwin for the Tientsin-Pukow line (Southern section). There are photographs of these, another of a locally built locomotive (Tongshan works) and also Baldwin 3'-6" gauge locomotives shipped to the Philippines.

New Shangtung Railway, the Germans were negotiating with the Chinese for the construction of a line from Ichoufu to Tsingtao. The Deutsch-Asiatische Bank was to arrange a loan on similar terms to the Pukow loan.

Canton-Kowloon Railway, H.E. Liang Shih-yi of the Board of Posts & Communications had visited Canton to sort out difficulties between natives and the local authorities. Recently a mob had threatened to destroy the line and had demonstrated near the British border. The Governor of Hong Kong had also recently inspected the British section travelling the whole route by rail with the exception of one bridge.

The Yalu Bridge Difficulty, the negotiations between the Chinese and Japanese for the construction of the bridge were reported to be concluded satisfactorily. Half of the bridge on the Manchurian side was to be purchased by China after 15 years or when the Antung-Mukden Railway was redeemed. The bridge was to cost ¥5000,000 and would be finished in 1912.

Antung-Mukden Construction, following improvement in the weather 80,000 coolies were reported to working on the line. Frequent confrontations between Chinese and Japanese police had occurred but talks were in hand to settle the differences. Taling, Tatung, Fuchin, Chinkeng, Chinchia, Fenshuiling, Liuchiaho, Heikeng, Tafangshenling and Hamatang stations had been converted to passenger use.

The Kirin-Changchun Railway, construction of the line was in progress and a site had been selected for Changchun station east of the walled city.

The Fukien Railway Company, the first section of the line was opned to traffic on May 9th. The terminus was at Seng Suu from which point the railway ferry carried passengers to Amoy. Only two miles of track had opened, which had taken three years to build owing to lack of funds. Construction was entirely in the hands of the Chinese.

Peking Railway News, the following new lines were to be built by Chinese engineers with Chinese capital: the 100 mile Tsang-Hsu Railway from Chinkiang to Hsuchowfu, Peking-Chingwantao Railway (a branch of the Peking-Kalgan railway) and the Tiao-Liao Railway running from the upper Liao to Tiaonanfu in Manchuria.

Honan-Tungkwan Loan Agreement, a loan agreement for this line had been announced.

New Trans-Formosan Railway, engineers were surveying from Bashi-ho on the west coast to Karenko on the east coast.

The Shangtung Railway Company, shares prices had increased following an increased dividend announcement.

The Chefoo-Weihsien Railway, the latest news about this line was encouraging with the Governor guaranteeing the balance of funds necessary for construction of the line.

The Szechuan-Hupeh Railway, the history of efforts to construct this line had been reviewed by the North China Daily News. Work had only just begun on the first section from Ichang to Kweifu in Hupeh, a distance of 90 miles. The correspondent was not impressed by those in charge and predicted that foreign assistance would eventually be needed.

Medals for Chinese Railway Employees, the Board of Communications had decided that railways staff would be awarded medals for outstanding service. There would be five classes of decoration.

Reorganization of the Pienlo Railway Staff, a recommendation had been made for reorganizing the foreign and Chinese staff of the Pienlo Railway.The line, which ran through Honan from Kaifengfu to Honanfu, had recently had control of the Kaifengfu traffic taken over by the Belgian Syndicate. The latter had employed more foreign staff and this had upset the Board of Comminications, who felt that this usurped their management

powers. The Board wanted the numbers of foreigners employed to be reduced but this had not happened. The Director of Railways, H.E. Liang Shih Yih had since directed that negotiations should be conducted with the Syndicate's European head office with a view to reducing the foreign staff. Proposals had been submitted for reducing the foreign staff by 26 compared with the previous year.

Kaifengfu-Suchow-Haichow Railway, a petition had been submitted to the Throne seeking permission to build this line. Two routes had been suggested, one to Haichow via Chenlin,Kihsien, Suichow, Ningling, Kuite and Tangshan and the other via Lanfeng, Kaocheng and Liukow along the River Houng-ho to Suchow.

South Manchuria Railway Co. Full-page advert . 5 small photos. (repeat of previous months)

Shanghai Nanking Railway Full-page advert . 3 small photos (repeat of previous months)

North British Locomotive Co. Ltd. 2 photos of locomotives repeat of previous months)

China, Manchuria, Japan, Indo-China, Siam, Straits Settlements, Malay States, Burma, India, Malaysia, and the Philippines

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THE FAR EASTERN REVIEW

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THE SHANGHAI MUNICIPAL COUNCIL, 1908

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CONTRACTING NEWS

EIGHT WOODEN LORCHAS FOR U. S. QUARTERMASTER'S DEPARTMENT, MANILA.—There were eight bidders, the lowest of which was Mr. Fred Wilson, Manila, ₱29,150. The other bidders were: The Cadwallader-Gibson Company, Manuel Earnshaw and Company, Juan Rodriguez, C. B. Williams, Wong Tid Company, Cho Chung Lung, and Varadero, all of Manila.

MANILA ARMY AND NAVY CLUB BIDS.—Delmar Smith, ₱213,000; R. M. Loper, ₱214,000; and the Atlantic, Gulf and Pacific, ₱221,200.

MANILA DEPOT COMMISSARY STORES.—Bids will be opened June 25th for the supply of 600,000 pounds of rice, 7,680 cans of jam, 200,000 pounds of granulated sugar, 30,000 pounds of butter, 3,600 cakes of glycerine soap, 35,000 bottles of effervescent water, etc.

CONTRACT FOR TRANSPORTING U. S. ARMY MEATS.—This contract has been awarded the Eastern and Australian Steamship Company.

U. S. QUARTERMASTER'S STEVEDORING CONTRACT AT MANILA AWARDED.—This contract has gone to the Luzon Stevedoring Company. There were four bidders.

STEEL FOR U. S. QUARTERMASTER.—The following bids were opened for the furnishing of reinforcing steel: California Manila Lumber Commercial Co., Trussed Concrete Steel Co.'s cup bars ₱66.28 per ton of 2000 lbs., Hy-Rib ₱15.70 per 100 square feet; Findlay & Co., Twisted steel $1.94 per 100 lbs; Frank L. Strong, corrugated bars $1.815 and $1.925 per 100 lbs; H. W. Peabody & Co., corrugated bars $34.64 and $36.74 per ton of 2000 lbs; Atlantic, Gulf & Pacific Co., corrugated bars ₱0.0372 per lb.

FURNITURE FOR THE UNITED STATES ARMY.—The contract for the manufacture of 800 dining chairs, 2,400 side chairs, and 400 sideboards was awarded the Cadwallader-Gibson Lumber Co. This company manufactures the well-known Gibson furniture. The contract represents about $60,000. The prices were: dining room chairs, $5.45, other chairs, $4.45, and sideboards, $29.45 each.

SHANGHAI MUNICIPALITY, CEMENT.—Tenders for the supply of Portland Cement in such quantities as may be required to be opened by the Council June 28th.

SHANGHAI MUNICIPAL COAL CONTRACT.—The Mitsui Bussan Kaisha secured the contract at Tls. 6.25 per ton for the year. The other bidders were: Messrs. Johnsen, and Herlofsen Shimoyamada, Tls. 5.60; Sander, Wieler & Co., Otokiri gomi, Tls. 6.50; F. Caissial & Co., Takaye, Tls. 7.00; Ohnour, Tls. 6.80; Yahsia, Tls. 6.50; Mitsui Bishi Co., Hojo, Tls. 7.00 and one irregular.

U. S. NAVAL SUPPLIES.—Bids were opened June 1st covering the supply of over half a million dollars worth of supplies as follows: Castle Brothers-Wolf and Sons were the only bidders for supplying 1,700,000 lbs. fresh frozen beef, 80,000 pounds of mutton and 50,000 pounds of veal. The figures for beef delivered at Cold Stores, on lighter in Manila Bay, and at Cavite being .1850, .18 and .19 centavos per pound, respectively; mutton .1590, .155 and .165, respectively; veal .2690, .25 and .26 centavos, respectively.

Bids were also opened for 300,000 pounds of beans, 30,000 lbs. tea, 150,000 lbs. rice, 30,000 lbs. sauerkraut, 20,000 lbs. corn meal, 15,000 lbs. cream cheese tinned, and 10,000 lbs. fresh.

Ah Gong bid: beans .15 ctvos. lb., tea .85, rice .0635, sauerkraut .15, corn meal .20, cream cheese, tinned and fresh .60.

Castle Bros.-Wolf & Sons bid to deliver at Manila and Cavite, respectively, as follows: beans .114 and .115, tea .538 and 685, rice .0462 to .05, sauerkraut .137 and .135, corn meal .171 and .169, cream cheese tinned .56, .65, and .558, .6487, cream cheese fresh .43 and .428.

The Manila Import Co. bid on tea for Manila del .55, and Cavite .52 lb., and on rice .0477.

Holliday, Wise and Co. bid only on rice at .0424 per pound. Rosario Vizcarra bid on a number of samples of tea, his prices ranging from 50 to 66 centavos per pound; rice .0489.

Sprungli and Company bid .559 on tinned cheese and .435 on fresh.

The bids tendered for the supply of 600,000 pounds of granulated cane sugar were received from Findlay and Company and Castle Bros.-Wolf and Sons, both firms submitting prices for delivery at Cavite, Manila and at Hongkong, and in cases and sacks, as follows: Findlay & Co. in cases, at Cavite, Manila and Hongkong: .0873, .08695 and 081, per pound, respectively, and in sacks .071, .07067 and .067. Castle Brothers' lowest bids for delivery in cases at Cavite, Manila and Hongkong, were .0895, .088 and .086, and in sacks .0746, .0721 and .07.

Bids were also opened for 200,000 pounds of Australian butter as follows: Castle Bros., .695 and .665 per pound; Holliday, Wise and Company .637, and Sprungli and Company .709.

On 10,000 fire brick the bids, with prices per hundred brick, were as follows: Rosario Vizcarra ₱13; Fred Wilson ₱9.25 and ₱9.50; Ker & Co. ₱9.50 and ₱9.85: Findlay & Co. ₱9.49; Macondray 3,500 only at .10½ ea.; J. Parsons ₱9.90 and Wm. H. Anderson ₱100 for the lot.

CAST IRON PIPE AND SPECIALS, CITY OF MANILA.—Bids were opened June 10th for the supply of 7,000 tons of cast iron pipe, hub and spigot pattern; 46 tons of 20 inch flexible joint and flange cast iron pipe; two tons of flanged cast iron pipe and about 200 tons of specials, and the contract awarded the Atlantic, Gulf and Pacific Company. The price was $227,000 U. S. Currency. The pipe will be supplied by Messrs. Macfarlane, Strong & Co. of Glasgow.

IMPERIAL TIENTSIN-PUKOW RAILWAY.—Steel plate girders to be delivered on wharf at Pukow during the month of May, 1910. Quotations in sterling and received by Managing Director at Nanking not later than June 20th, 1909:

12 Spans of Deck Girders, 12 feet clear span; 8 Spans of Deck Girders, 20 feet clear span: 150 Spans of Deck Girders, 30 feet clear span; 30 Spans of Deck Girders, 50 feet clear span; 8 Spans of Deck Girders, 75 feet clear span.

IMPERIAL-TIENTSIN-PUKOW RAILWAY.—Rolling Stock for Southern Section. To be delivered at wharf, Pukow, in January, 1910. Tenders addressed Managing Director, Nanking, to be opened June 25, 1909.

For 100 High Sided Wagons (30 tons); 100 Low Sided Wagons (30 tons); 50 Covered Goods Wagons 20 tons).

Also eight tender locomotives 2-6-0 type, cylinders 19"×24". Coupled Wheel 5'-0" diameter. Working pressure 180 lbs. With six wheel-tenders.

The locomotives and tenders to be delivered on the railway wharf at Pukow; four locomotives to be delivered during the month of April 1910, and the remaining four during the month of August 1910.

Tenders should be addressed to the Managing Director, Tientsin-Pukow Railway, Southern Section, Nanking. They will be opened at 10 a. m. on Tuesday, the 29th June, 1909.

OFFICE OF THE MUNICIPAL BOARD.—Manila, P. I., February 15, 1909.

Sealed bids or proposals will be received by the secretary of the Municipal Board, Manila, P. I., until 12 o'clock m., July 1, 1909, for furnishing gate valves, air valves and fire hydrants for the city of Manila, Philippine Islands.

The total amount to be furnished will be approximately one hundred and sixty (160) gate valves, twenty (20) air valves, and three hundred and twenty-five (325) fire hydrants

Specifications, general plans, and blank forms of proposal may be obtained at the office of the secretary of the Municipal Board, Manila, P. I., or from the Chief of the Bureau of Insular Affairs, Washington, D. C.

Each proposal must be accompanied by a certified check for three thousand dollars ($3,000), United States currency, drawn on a local bank; or a bond in like amount, signed by a fidelity insurance company, authorized to give such bond in the Philippine Islands, as a guaranty that the bidder, if awarded the contract, will, after due notification, promptly enter into contract and furnish an acceptable bond in the sum of twenty (20) per cent of the sum total of the contract price for the faithful performance of the work.

The right is reserved to reject any or all bids.

H. L. FISCHER,
Secretary of the Municipal Board.

J. F. CASE,
Chief Engineer, Department of Sewer and Waterworks Construction.

IMPERIAL TIENTSIN-PUKOW RAILWAY.—Tenders invited, to be opened June 21st, 1909, by the Managing Director at Nanking. China, for the furnishing free of all charge at the wharf at Pukow, not later than December 31st, 1909, Steel Plate Girders as follows:

26 Spans of Deck Girders, 12 feet clear span; 12 Spans of Deck Girders, 20 feet clear span; 60 Spans of Deck Girders, 30 feet clear span; 12 Spans of Deck Girders, 50 feet clear span; 2 Spans of Through Girders, 50 feet clear span; 3 Spans of Deck Girders, 75 feet clear span; 3 Spans of Through Girders, 75 feet clear span.

Quotations in sterling and bids must be presented on or before June 20, 1909.

PROPOSALS FOR CONSTRUCTION OF SIX STEAM LAUNCHES.—Headquarters Philippines Division, Office of Chief Quartermaster, Manila, P. I., May 20, 1909. Sealed Proposals, in triplicate, subject to the usual conditions, will be received here until 10:00 a.m., July 15th, 1909, and then opened, for the construction and delivery of Six Steam Launches. Blank forms, plans and specifications furnished upon application to this office and to the representative of the Consular Service of the United States at Hongkong, Shanghai and Singapore. Envelopes containing proposals should be endorsed "Proposals for construction of six Steam Launches, to be opened at 10:00 a.m., July 15th, 1909" and addressed to the Chief Quartermaster, Philippines Division, Manila, P. I.

PROPOSALS FOR REPAIRING THE U. S. A. T. "WARREN."—Headquarters Philippines Division, Office of Chief Quartermaster, Manila, P. I., May 15th, 1909. Sealed Proposals, in triplicate, subject to the usual conditions, for repairing the U. S. A. T. "WARREN," will be received here until 10:00 a.m., July 10, 1909, and then opened. Information and blank forms furnished upon application to the Representative of the Consular Service of the United States at Hongkong, Shanghai, Singapore and Chief Quartermaster, Philippines Division, Manila, P. I. Envelopes containing proposals should be endorsed "Proposals for repairing the U. S. A. T. 'WARREN,' to be opened at 10:00 a.m., July 10, 1909," and addressed to the Chief Quartermaster, Philippines Division, Manila, P. I.

PROPOSAL FOR ROPE.—Headquarters Philippines Division, Office of Chief Quartermaster, Manila, P. I., June 12th, 1909. Sealed proposals, in triplicate, subject to the usual conditions, for furnishing and delivering approximately 300,000 lbs. (30% more or less) of rope including all standard sizes from six thread heaving lines to eight inch towing lines, will be received here until 10:00 a.m., July 12th, 1909, and then opened in the presence of attending bidders. Certified check or guaranty in 10% of the amount of the bid must accompany each proposal. Blank forms and information furnished upon application. Envelopes containing proposals should be endorsed "Proposals for Rope, to be opened at 10:00 a.m., July 12th, 1909," and addressed to the Chief Quartermaster, Philippines Division, Manila, P. I.

FAR EASTERN ENGINEERING, CONSTRUCTION, COMMERCIAL AND FINANCIAL NEWS

ELECTRIC RAILWAYS, LIGHT, POWER, TELEGRAPHS, TELEPHONES, AIRSHIPS, ETC.

DAIREN ELECTRIC RAILWAY.—The work on this system is progressing rapidly and traffic will begin on a number of streets in July.

TO MANUFACTURE TELEGRAPH SUPPLIES.—Peking is contemplating establishing a plant to manufacture equipment for the Chinese telegraph system.

LONG DISTANCE TELEPHONES IN KWANGTUNG.—It is proposed to connect all the towns in the peninsula with a view to utilising the service for police purposes.

WIRELESS IN BURMA.—A wireless service has been inaugurated connecting Mergui, Victoria Point, Rangoon and Calcutta. This service was inaugurated in February.

TOKYO-NARITA RAILWAY.—A scheme is being floated to connect these two points with an electric road and an effort is being made to raise the necessary funds in London.

CANTON ELECTRIC COMPANY.—The Viceroy of Kwangtung has been negotiating, through the firm of Messrs. Shewan Tomes & Co., for the redemption of this company. The price will be in the neighborhood of $1,500,000.

WUHU ELECTRIC LIGHT COMPANY.—This company is equipped to provide 6,000 lights of 16 candle power each and there is every indication from the orders filed for service that the present capacity will soon have to be increased.

HONGKONG TELEPHONES.—The announcement was made at the meeting of the Oriental Telephone Company that the China and Japan Telephone Company intended connecting Kowloon and Canton as soon as the railroad between these two points was completed.

JAPANESE ELECTRIC RAILWAYS.—At the end of February the Railway Board announced that there were 61 chartered roads in Japan which included a chartered mileage on the roads wholly or partly in operation of 342 miles and an inaugurated mileage of 197 miles.

GERMAN COLONIAL WIRELESS.—The German Government is interested in a plan to connect the South Sea Islands by wireless and also to put them in direct communication with the outside world. This system will include all the German colonies in the Pacific and later include the other islands.

F. M. S. TELEGRAPH LINE.—The land line between Kuala Lumpur and Singapore was open for business May 17. This means a reduction on messages from 25 cents a word by way of Penang and 13 cents a word by way of Malacca, to three cents a word only. This line is under the control of the Bureau of Posts and Telegraphs.

CHINESE RAILWAY TELEGRAPH LINES.—It is proposed to have the telegraph lines along the railways in China included in the Imperial system and the management of the Peking-Hankow, Peking-Mukden-Chenting-Taiyuen, Pienchow-Lohyang and Taokow-Tsinghwa companies have been directed to connect their railways under the direction of the telegraph company.

PHILIPPINE WIRELESS.—The Philippine Government has provided for the establishment of eight wireless stations as follows:

"Masain, Leyte, Surigao, and Mambayao in Misamis; Cuyo, Culion, and Puerto Princesa in the province of Palawan; Bojeador, Ilocos Norte; and Basco, Batanes Islands. The amount appropriated for this purpose is ₱170,000."

JAPAN'S LIGHT AND POWER PLANTS.—Consul General Babbitt in his report from Yokohama says that the generating industry in Japan at the end of 1908 developed:

"Steam, 54,550 kilowatts; water, 31,951 kilowatts; gas, 105 kilowatts; total, 86,606 kilowatts, an increase of 12,090 as compared with 1907. It was worthy of special notice that the Tokyo Electric Light Company succeeded in the high transmission of 55,000 volts over a distance of 47 miles, from Katsura to Tokyo."

RAILWAYS AND RAILWAY SUPPLIES

SOUTH MANCHURIA RAILWAY SCHOOL.—There were 644 pupils enrolled in this school March 31st.

CANTON-KOWLOON RAILWAY.—The Governor of Hongkong places the excess of cost of this line at $1,000,000 over the estimates.

KIRIN-CHANGCHUN RAILWAY.—The sites for the depot and the other buildings for the proposed railway have been selected. This is the first indication of activity.

KIANGSU RAILWAY.—The opening of the section of the railway to Fengching took place on May 30th. It is expected that this line will be completed about 1911.

SOUTH MANCHURIA RAILWAY.—The gross earnings for the six months ended March 31st amounted to Yen 10,109,000 an increase of yen 2,568,400 over the corresponding term 1908

PEKING-KALGAN RAILWAY.—It was expected that the entire line to Kalgan would be opened at the end of June. The line to Huayen was in operation, a distance of 30 li from Kalgan last month.

WANT SWING RAILWAY BRIDGES.—The Chinese Chamber of Commerce at Tientsin has filed a petition with the Tientsin-Pukow Railway authorities asking that the rivers be spanned by swing bridges.

NEW HONAN RAILWAY.—The correspondent of the *Peking and Tientsin Times* at Changte writes that Chinese surveyors have completed the survey of a line connecting Changte with the coal regions about 80 li westward.

THE ANHWEI RAILWAYS.—It has been announced that Messrs. Pauling will finance this system. The loan will be for Tls. 16,000,000 and represents the estimated cost of construction and equipment of 800 li or 266 miles of lines.

CANTON-MACAO RAILWAY.—The syndicate organized to construct this line will probably be granted its franchise next month. It is understood that the line in Chinese territory will be built by Chinese and the Portuguese section financed by the Banco Nacional Ultramarino.

HONGKONG PEAK RAILWAY.—The consideration of four alternate routes for this line is being considered as follows:

"(1) a tunnel under the Gardens, (2) a line on the surface of Gleneavy Ravine, (3) a line on high trestles in the Ravine, (4) a wide cutting through the Public Gardens. There is much opposition to the line cutting through the public gardens.

CAPITAL INVESTED IN JAPAN'S RAILWAYS.—Following is the summary of the capital represented:

	Yen.
Price paid by Government for the 17 Nationalized Railways	481,981,471
Private Lines	148,493,290
New Constructions in 1908	30,000,000
Total	660,474,761
Special Capital	96,991,239
Grand Total	757,466,000

SOUTH MANCHURIA RAILWAY CONSTRUCTION.—The following is the program announced for the year:

"New Workshops at Shanokou, near Dairen; preliminary work for Yamato Hotel, Dairen; completion of Yamato Hotel, Changchun; completion of Mukden Station; Church, Theatre, Colliery Club and Chief Engineer's Mansion for Fushun; Market-Places for Wafangtien and Tashihchiao; elementary schools for Liaoyang and Changchun; slaughter houses for Liaoyang and Kuncheling; roads for Liaoyang, Mukden, Tiehling, Kungcheling and Changchun; waterworks for Liaoyang, Mukden, Tiehling and Changchun.

PUBLIC WORKS, DOCKS, WHARVES, ETC.

ANOTHER PROPOSED NEW PORT.—There is some talk among the Cantonese to develop a port at Nanshui, near Canton.

WHANGPOO CONSERVANCY TEST.—The passage of H.B.M.S. Astraea through the new junk channel was made successfully and at no point was there found less than 28 feet of water while a depth of 34 feet and upwards was recorded at different points.

STRENGTHENING YANGKINGPANG BRIDGES.—For the purpose of strengthening these bridges so that the two tramway companies of Shanghai may run a common service a conference between the Chief Engineer of the concession and the municipal engineer has been held.

HUNCHUN PORT IMPROVEMENTS.—This port situated about 60 miles from the mouth of the Tumen is to be developed by the Kirin provincial government with a view to open it up to steamer traffic. The sum of Tls. 600,000 has been recommended expended by the authorities.

TSURUGA HARBOR.—The sum of yen 800,000 will cover the cost of the work proposed to improve the harbor of this Japanese port which is to cover an area of 54 acres dredged to a depth of 24 feet at low tide. Breakwaters will be extended and warehouse built so as to bring it up to a modern standard of convenience to shipping.

BRITISH APPROPRIATIONS FOR FAR EASTERN CONSULAR BUILDINGS.—Under the heading of New Works, Alterations, Additions, and Purchases (including Furniture in connection therewith), are the following votes:—Changsha: Erection of new Consulate, £1,000; Mukden: Erection of new Consulate, including residences for Assistants, stables, etc., £7,000; Newchwang: Installation of electric light and bells, £160; Peitaiho: Erection of summer quarters for the Peking Legation, including furniture (revote £900), £3,000; Peking: Improving water supply to residences, £550; Peking: Erection of cowshed, £180; Peking: Erection of house for Chinese Secretary, £500; Peking: Extension of electric lighting, £500; Tientsin: Addition to offices, £100; Acquisition of new sites in China, Japan, and Korea, £1,000.

KUSHIRO HARBOR WORKS.—The following description is given of the first part of extensive improvements to the port by British Consular reports:

1. A breakwater will be constructed, with a total length of 4,150 ft., starting from the cliffs to the west of the Kushiro lighthouse, and enclosing a harbor with an area of over 446,000 tsubo (368 acres). A further prolongation of 1,500 ft. will give an area of over 612,000 tsubo (506 acres). 2. Diversion of the River Akan and construction of an embankment at the mouth of the river. Each bank of the new rivermouth is to be extended by an embankment 1,900 ft. long which is to be erected so as to prevent the mouth being silted up with sand during high seas. 3. A groin is to be constructed in a south-westerly direction from the right bank of the mouth of the Kushiro. This will have a length of 1,930 ft., and will enclose the harbor, thus preventing the sand from being carried into it. 4. The harbor will be divided into two sections. The first section will be dredged to a depth of 26 ft. at low water, and the second to a depth of 12 ft. The estimated cost will be 4,759,541 yen (about £486,000), spread over 12 years.

SHIPBUILDING, GENERAL MARINE AND FISHERIES

BLUE FUNNEL LINE ACTIVE.—The Blue Funnel line is building four new liners for the purpose of entering the trans-Pacific trade.

SHANGHAI-NINGPO STEAMSHIP COMPANY.—This company has purchased a steamer from the Peking Government for Tls. 300,000.

KWANGTUNG DEEP SEA FISHING.—The Marine Products Association will soon introduce the use of trawlers in the territorial waters of the leased territory.

NIPPON YUSEN KAISHA FLEET.—The fleet owned by this company comprises 80 steamers ranging from 700 to 8,500 tons aggregating about 300,000 tons.

DAIREN BRANCH OF THE KAWASAKI DOCKYARD.—The announcement is made that this branch is now equipped as thoroughly as the home establishment.

FORMOSA SHIPPING.—The total tonnage entering and clearing Formosan ports during the year 1908 was 462,670 tons, an increase over 374,890 for the previous year. This is largely due to the deepening of Keelung harbor.

NEW JAPANESE CRUISERS.—An order each has been placed with the Mitsu Bishi Dockyard, Nagasaki, and the Kawasaki Dockyard, Kobe, for the construction of a 5,000 ton cruiser of high speed which will be completed by 1912. They will be utilized for dispatch vessels in time of war.

OSAKA SHOSEN KAISHA'S NEW STEAMERS.—The Tacoma Maru, one of six new steamers for the run connecting with the Chicago, Milwaukee, and St. Paul Railway via Seattle, was recently launched from the Kawasaki Dockyards. Her dimensions are: Lengths pps. 410', Breadth md, 51'3", Depth md. 32' 6". Tonnage: Displacement—12,000 tons, Gross Reg.—6,178 tons, Net Reg.—3,833 tons. Class: Lloyd's 100 A-1. with twin Screws; Speed: 15½ knots per hour; Electric Lighted and Steam Heated.

MINES, MINERALS AND THE METAL TRADE

BATAN COAL COMPANY.—This company has been installing new machinery and its coal has proved very satisfactory.

RICH STRIKE AT THE RAUB.—A lode was struck in the Anderson shaft reported to be sixty inches wide and carrying gold to the amount of 20 dwt. to the ton.

NEW CHINESE IRON WORKS.—The Viceroy of Chili and the Governor of Shanghai have been instructed by Peking to establish a works plant in Shansi along similar lines to the Hanyang.

BURMA OIL WELLS.—The rich strata of oil recently struck by Jamal Brothers at the Yenangyaung oil fields has now been tapped by both the Burma Oil Company and the Rangoon Oil Company with greater flow than at first obtained. This oil was tapped at a depth of 1,350 feet, being the greatest depth yet reached in the Burma oil fields.

PHILIPPINE MINING ACTIVITY.—The Paracale placer fields continue in active development. Several new dredgers will soon be installed; a twenty stamp mill is being placed in the San Mauricio quartz property and a number of new companies are being organized. In Benguet several deals have been concluded, among them the sale of a one-tenth interest in the Headwaters Mining Company by Nels Peterson to Hongkong capitalists through Governor Whitmarsh for ₱40,000.

FINANCIAL AND MISCELLANEOUS

FORMOSAN RICE CROP.—The total area under rice during 1907 was 788,470 acres and the crop 44,760,800 bushels.

INDUSTRIAL BANK DEBENTURES.—This institution has issued its fourteenth debentures to the amount of yen 2,000,000 drawing 5.5%.

CHARTERED BANK AGENCY IN F. M. S.—It has been decided to establish its branch at Tongkah and the site for the building has been selected.

KYOTO MUNICIPAL LOAN.—The flotation of a yen 5,000,000 loan has been successful. It was taken up by the Mitsui and other Tokyo Banks.

KIRIN BRANCH OF GREAT CHINESE BANK.—The city of Changchung has been selected as the location for the Kirin branch and it is now open for business.

LARGE ORDER FOR MANILA CIGARS.—The United Cigar Stores of the United States have placed an order in Manila for 12,000,000 cigars to be shipped upon the passage of the Payne Bill.

BANK OF FORMOSA.—This institution proposes to establish branches at Canton and Bangkok in addition to its present connections and to increase its capital from five to ten million yen.

MANCHURIAN MEDICAL SOCIETY.—The recently organized society held a general meeting at Dairen last month and Major General Miura of the medical corps of the Japanese army was elected chairman.

HAINAN FINANCIAL AGENCY.—A Straits Chinese millionaire has started a bank on the island of Hainan for the purpose of financing enterprises formed for the purpose of developing the mining resources.

China, Manchuria, Japan, Indo-China, Siam, Straits Settlements, Malay States, Burma, India, Malaysia, and the Philippines

THE FAR EASTERN REVIEW

VOL. VI: No. 2. MANILA, SHANGHAI AND YOKOHAMA, JULY, 1909. 35 cents U. S. Currency 50 " Philippine Cy.

THE RULERS OF CHINA

THE HOUSE OF CH'UN

His Imperial Majesty, HSUAN TUNG,
The Emperor of China, standing by his father the Regent,
Prince of CH'UN, is the new Son of Heaven
and Ruler of the Middle Kingdom

ENGINEERING
COMMERCE FINANCE

THE FAR EASTERN REVIEW

GEO. BRONSON REA, M. E.
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MANILA, SHANGHAI, AND YOKOHAMA, JULY, 1909

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THE TIMES AND THE FAKUMEN RAILWAY

In the May issue of the FAR EASTERN REVIEW, under date of April 30th, ulto., we published an editorial on the Fakumen Railway from our own correspondent, which clearly presented and explained the motives of China in seeking the construction of this extension to the Imperial Railways of North China, and the just and reasonable demands of Japan in protesting against this violation of the Peking Agreement of 1905.

One month subsequent to the above date, the foreign editor of *The Times*, Mr. Chirol, accompanied by Dr. Morrison, the Peking correspondent of the same paper, arrived in Japan.

It appears that these well-known and able journalists made a special journey to Tokio, for the purpose of learning the Japanese side of the many outstanding issues between Japan and China, and with particular reference to the Fakumen Railway dispute, in which British interests were concerned. This question had been agitated for nearly two years, and public opinion in England gradually diverted in favor of China, and against Japan, with a tendency to weaken the existing bonds of friendship and destroy the effect of the alliance.

While in Japan, the British journalists were treated with extraordinary distinction and honor as though they were special ambassadors. Received in audience by the Emperor, and in long interviews and conferences with cabinet ministers and leading statesmen, wined, dined, and feted, and showered with courtesy and honors, they were led to see a new light and new interpretation of Japan's attitude bearing on the lengthy dispute.

There was an earnest and sincere effort made by Japan to remove all misconceptions concerning their policy in Manchuria and convince the visitors of Japan's desire to maintain the cordial and friendly relations with Great Britain.

The result of the visit appeared in a lengthy special cablegram, dated May 30th, to *The Times*, in which Mr. Chirol fully indorsed and supported Japan's attitude, and exposed the intrigue by which China hoped to create discord and weaken the alliance. With the exception of a few minor facts, Mr. Chirol fully confirmed and echoed the sentiments of our editorial published in the May number of this paper.

And so practically terminates public agitation of the much discussed and advertised Fakumen dispute. It is to be deeply regretted that China maneuvered herself and her newspaper friends into an untenable position, and now all that remains is for everybody to climb down gracefully, acknowledge their error, and undo the work of the last two years.

China has nothing to fear from a straightforward presentation of her case and a return to reason. Her friends cannot press a cause which has for its purpose the creation of international jealousies, discord, and ultimate strife.

CHINA'S INGRATITUDE

After serving the Chinese Government for 31 years as Chief Engineer of the Imperial Railways of North China, Mr. C. W. Kinder, C.M.G., has finally severed his connection with the enterprise he has built up, and departed for his home in England. And so closes another chapter in China's campaign to eliminate foreign guidance in her industrial affairs. The departure of the man who gave the best of his life to China's material advancement, will be viewed in the light of a distinct triumph by those officials responsible for his resignation, and another step forward towards the goal they have set their heart on.

The effect on the foreign mind, however, will be quite different. The circumstances under which Mr. Kinder was practically forced to resign his post to maintain his self respect and the confidence of his fellow countrymen are such as must surely react on China in the long run. China owes one of her most valuable revenue assets to the engineering ability of the man whom she has now thrown over—with no expression of appreciation for his valuable services. The Imperial Railways of North China stand as an example of the result that honest and efficient railway construction and management can bring to the Government. On a total capital account of a little less than $50,000,000 silver, 600 miles of road have been constructed and equipped, stations and other permanent improvements carried out, and the net earnings for last year show a profit of nearly $8,000,000 or 16%. The working expenses of the road, in relation to earnings, are 28 per cent, a remarkable showing, and proof of high executive ability and sterling honesty in expenditures. The handsome returns of this line opened the eyes of the Chinese Government and fixed their determination to preserve the railways for themselves.

There is something due to the man whose administrative talents assisted towards making such a showing possible, and it was to be hoped that the Chinese Government would at least treat him fairly, if not actually reward him. The letter of Mr. Kinder to the Director General of Railways in Peking not only opens our eyes to the base ingratitude displayed by the Chinese authorities to a devoted and loyal servant, but confirms the many rumors and suspicions that China is not living up to the strict letter of her obligations. No one was in a better position to interpret China's attitude on railway matters, and when the retiring executive tells his Chinese official superior that he "finds the Board, as at present constituted, is distinctly hostile to what he considers as China's true interests, as well as *the honest reading both of Loan Agreements and Protocol*, it explains the attitude of the British group of capitalists in refusing to loan any more money to China, except under terms that guarantee honest expenditure of the funds provided, and confirms many statements which have been shrouded in uncertainty. The letter of Mr. Kinder, which we reproduce from the *Peking and Tientsin Times*, is as follows:

April 2nd, 1909.

H. E. LIANG-SHI-YI,
Director General, Peking.

Dear Sir:—

After giving more consideration to your offer to make me Advisory Engineer to the Board, residing in London, I have decided that it is wisest not to accept the position.

I find that the Board, as at present constituted, is distinctly hostile to what I consider as China's true interests as well as the honest reading both of Loan Agreement and Protocol.

The Board has also persistently ignored my position and authority in a marked degree ever since Mr. Chow resigned his post as Director.

Under these circumstances it would be impossible for me to serve with the full respect and loyalty essential to any one acting in an advisory position.

With regard to pay in lieu of leave, I trust you will reconsider your proposal to give me a bonus of £600, which I prefer not to accept. I merely want what I am fairly entitled to and not presents in any form whatever.

I shall be obliged if you will let me have an immediate reply.

Yours truly,
(Signed) C. W. KINDER.

From September, 1878, to April, 1909, a period of 31 years, Mr. Kinder enjoyed just 15 months' leave, and when he retired he was entitled to the amount of 21 months accrued leave or salary in lieu thereof, amounting to £3,500. His application for this amount was refused, and in return he was offered a bonus of £600 and a three years' position as Advisory Engineer to the Board, residing in London, or in other words he was to continue his labors for three years to obtain a sum that was his due. The Chinese Director of Railways offered him £2,000—a year's pay—which Mr. Kinder accepted rather than prolong a matter which must have been galling to his self-respect and pride. In sharp contrast to this shabby treatment of Mr. Kinder was that meted out to M. Jadot who constructed the Peking-Hankow line. After five years' service he was awarded a bonus of £10,000 for building the railway, and £2,000 for the construction of the Yellow River Bridge. It will be a long while before this action of H. E. Liang-Shih-Yi will be forgotten, and so long as he remains in the Railway Board, the Chinese Government cannot expect the confidence of foreign investors in their future railway schemes.

Since the above was written a man of marked ability and honesty has been appointed as President of the Board of Communications, and, under H. E. Hsu Shih Cheng, the affairs of the Board are running more smoothly, and his administration will do much towards restoring public confidence and trust.

FAR EASTERN RAILWAY NEWS

THE PHILIPPINE RAILWAY CO.—This company has now in operation 60 miles of line in Cebu and 44 miles on the Island of Panay. The Cebu line is practically complete and connects Danao and Argao the terminal points, and the Panay line which is to connect Iloilo and Capiz will be 72 miles in length when completed, as provided in the concession. There are 22 stations on the Cebu line, 20 of which are constructed of reinforced cement and 10 stations completed on the Panay line of the same character. Four mixed trains run daily each way giving an excellent passenger and fast freight service. The locomotives used were furnished by the Baldwin Locomotive Company and are of three types, 50 ton for heavy construction work and ballasting, and 35 ton and 30 ton for mixed train service. Two small German locomotives are used for switch engines. The track is narrow gauge, and with the exception of 20 miles on Cebu and 20 miles on Panay 70 pound steel supplied by the U. S. Steel Product and Export Company has been used. Hardwood of the First Group was used for ties and six inches of ballast were put under the tie as a standard, but owing to settling in the mud many instances are noted where 12 inches of ballast were tamped. The telegraph lines are strung with No. 10 copper wire with "Selector" telephones for dispatching and the stations are equipped with train order signals. The road is operated where complete with the dispatcher's block system. The passenger coaches have a steel underframe and are equipped with complete airbrakes and signals. The first class and parlor coaches are finished in teak and the second class in sheathed yellow pine. The freight equipment comprises 10 and 20 ton steel frame cars convertible from flat to box, also 40 ton wooden construction flats and 30 ton wooden ballast cars. All these cars are equipped with conductor's air, automatic cuplers and air brakes.

The maximum grade on these lines is one per cent. and the maximum curvature six per cent. The width of embankment is 14 feet at shoulder line with sufficient expansion both vertical and horizontal allowed so that after two rainy seasons the embankment will conform to the 14 foot standard. The bridges are constructed of steel and reinforced cement with reinforced cement piles.

Storehouses, machine shops, woodworking shops, power houses, coach sheds, freight and office buildings, round houses, lumber sheds and turntables have been practically completed, all being built of reinforced concrete.

Work is progressing favorably on the Panay line from both ends. Previous to the rainy season construction was pushed in the lowlands and operations are practically confined to the cuts, etc., during the present season.

Vice-President Poland of this company is very active in encouraging agriculture in the districts traversed by the company lines especially in the culture of tobacco and maguey. In this work he has the co-operation of the Philippine Agricultural Bureau. During the year he distributed 350,000 maguey plants furnished by the Bureau among the native farmers and has gone to great pains to instruct them in the best methods of planting, cultivating and harvesting the product so as to obtain the best results. A maguey stripping machine loaned by the Agricultural Bureau is installed on a flat car and operated free of charge by the company at points where the maguey is being cultivated. This year over 2,000,000 plants will be distributed. This work is already giving results and the farmers are greatly interested for the reason that the returns from maguey are greater than from any crop heretofore realized, while the inducement to produce the best quality is found in the better market price already realized by those who have followed Mr. Poland's instructions. A corps of men are engaged in distributing these plants and instructing the farmers at the expense of the company and it is believed that in Cebu alone the annual export of maguey will reach into the millions in a few years. A similar campaign is being instituted with regard to tobacco in both Cebu and Panay.

MANILA RAILWAY COMPANY CONSTRUCTION.—This system, including an extension from Camp One to Baguio recently arranged for, when completed will mean a mileage of about 810 miles. The Northern Section will consist of about 350 miles, and what is designated as the Southern Section, 465 miles. The Northern Section is being built without any Government guarantee, but provision has been made for the guarantee of interest on bonds as regards the Southern Section. When the whole system is completed a line of railway will run from one end of the island of Luzon to the other. The construction of the extensions is progressing rapidly and the territory traversed has been greatly benefited.

YUET-HAN RAILWAY SUPPLIES.—The Nippon Yusen Kaisha and the Japanese Bank are reported interested in the formation of a company to have for its purpose the supplying of railway materials for the Yuet-Han Railway.

PEKING-HANKOW RAILWAY.—This company proposes adding 200 carriages to its rolling stock and to equip the principal points along the line with hotels, etc., designed for the comfort of travelers. Advices from Peking are to the effect that the gross receipts for the year exceeded previous terms by a million taels.

HUNAN AND HUPEH RAILWAY LOAN.—A loan has been arranged by Chang Chih-tung with the German, French, and British Banks for the loan of £5,500,000 to be utilized for the redemption of £500,000 in bonds sold the Belgian Syndicate by the American company; £2,500,000 to be spent on the section running through Hupeh and Hunan, and the balance to be expended in the construction of a line from I-chang to Kwang-shui on the Peking-Hankow and another line connecting Ching-men with Hankow. The construction will be under Chinese supervision and the auditing under the direction of the banks interested. The price paid to China on the bonds was 95.

ANTUNG-MUKDEN RECONSTRUCTION. — The widening of this line to a standard gauge, which has been under consideration since the signing of the Treaty of Portsmouth, has been meeting with some discouragement from the Chinese Government. The Japanese have been waiting for action on the report of the joint Commission of Investigation which completed its labors in April last. Nothing definite has been heard from Peking, and unless some early action is taken soon the work of construction will have to be postponed until next year.

YALU RAILWAY BRIDGE.—The construction of this large bridge is reported to have begun under the direction of the Railway Administration of the Residency General last month.

REFRIGERATOR CARS FOR JAPANESE RAILWAYS.—There is being constructed at the Shimbashi Railway Works a number of refrigerating cars which will be utilized by the Railway Bureau on its different lines bringing the number operated up to 20. Ten of these cars were recently delivered. Their average capacity is from seven to eight tons.

GRAIN ELEVATORS OF SOUTH MANCHURIA RAILWAY.—The construction of elevators on the wharves at Dairen having a capacity of 60,000 tons is under consideration by the railway authorities. Later it is expected that a system of elevators will be installed by the company along its lines for the purpose of accommodating the bean trade.

SOUTH MANCHURIA RAILWAY HOSPITAL.—The building occupied by the Yamato Hotel will be utilized as a railway hospital when the former management enters into its new headquarters. It is the purpose of the company to provide accommodation for over 200 patients.

THE KIANGSU RAILWAY OPENING.—The first section of the Shanghai Hangchow-Ningpo Railway, which extends from Shanghai to Feng-ch'ing, a distance of about 38 miles, was opened to traffic on May 30th. This line was built under the direction of Mr. Chin, Engineer-in-Chief, with H. E. Jeme Tien-yow, now in charge of the Peking-Kalgan R. R. as consulting engineer. The preliminary survey of the line was made in the winter of 1907 There are ten stations and 48 steel bridges on this section. The longest bridges have spans of 440 feet, 400 feet, and 200 feet respectively. The average cost of construction was £7,000 per mile. The locomotives were supplied by the American Locomotive Company and the coaches are of American manufacture. The sleepers were supplied by the Japanese. Green Island Cement was used in construction and the steel supplied by the Hangyang Iron Works.

THE PENINSULAR RAILWAY.—The scheme to connect Singapore with Bangkok by rail through British territory, or territory within the British sphere of influence, is expected to be effected within the next few years. The line from Singapore for a distance of 196 miles in this direction will be completed by the end of 1910 which will leave but 150 miles to make connection with the Siamese terminus. It is proposed to spend the £4,000,000 loan provided for in the Anglo-Siamese Treaty to continue the line from Bangkok to the border at Kelantan. Then there is the project to ultimately connect the Burmese railways with this system.

THE HONGKONG-CANTON RAILWAY.—On June 11th a resolution was adopted by the Legislative Council of Hongkong appropriating the sum of $3,280 663 for the purpose of carrying on the construction work of the British Section for the year 1909 It came out in the discussion over the resolution that the tunnel has cost $1,250,000 more than the estimated outlay. It is anticipated that the line will be open to traffic next year. The work on bricklining the tunnel is being pushed as well as on the reclamation.

PEKING-LAKE BAIKAL RAILWAY.—The project to connect Mysovaya, on the shore of Lake Baikal and a point on the Trans-Siberian Railway via Kiatcha, with Kulung, the end of the extension of the Peking-Kalgan line, is meeting with strong support at Peking.

JAPANESE RAILWAYS.—The rolling stock of the Japanese railways under direction of the Railway Board is represented by 32,705 freight cars and 67 private cars.

ISE LIGHT RAILWAY COMPANY.—This company has been organized with a capital of 22,000 yen for the purpose of connecting Otobe and Shirako by way of Isshinden, a distance of 10 miles, with a light railway. It is expected completed within two years.

KOSAKA-ODATE RAILWAY.—This line, which is 15 miles in length, was finished and opened to traffic June 15th.

THE SUNNING RAILWAY.—The Kun-yik Taushan section of the Sunning Railway, covering a distance of 40 miles completed, and 43 miles in all, was opened for traffic last month. This section took two years to construct. The first section of the Sunning Railway connecting Sunning City with Kun-yik, a distance of 15 miles, was opened to traffic about a year ago. The line cost about $33,000 a mile and, according to reports, is earning about $800 a day. There are nine locomotives in operation, six being American and supplied by the Baldwin Locomotive Company and two of German make. Two of the American locomotives are of 60 tons, three of 65 tons, and one of 40 tons. One of the German locomotives is of 40 tons and the other two of 25 tons. It is a standard gauge line laid with 60-pound steel supplied from Germany. There are eight first class passenger cars of corridor type supplied by America with ten box and many flat cars. It is proposed to connect Kun-yik and Kong-

moon, a distance of 30 miles. Mr. Chin Gee Hee is president of the line and responsible for the line surveyed, constructed, financed, and operated by Chinese. President Hee got his experience in America where he lived for over 43 years. The occasion of the opening was celebrated by an excursion over the 40 miles open, to which foreign and Chinese representatives of every department of industry were invited.

RUSSO-CHINESE RAILWAY AGREEMENT.—The recent agreement concluded between the Russian and Chinese representatives regarding the Railway Area follows:

(1) The recognition of the suzerainty of China and of the validity of the Chinese Eastern Railway Agreement.

(2) Equal treatment for Chinese and foreigners alike.

(3) The organization of municipal councils and district assemblies on stated conditions.

(4) The exercise of absolute control by the Chinese Eastern Railway over the station compounds, workshops, etc.

PEKING-KALGAN LOCOMOTIVES.—The three 100-ton Shay Locomotives sold to the management of the Peking-Kalgan Railway by Messrs. Shewan Tomes of Tientsin are supported by a three bogie truck, all wheels being drivers propelled by flexible shafts. They are designed to climb grades of 1 in 17 and all the weight rests on the drivers. The hauling capacity exclusive of weight of engine and tender is: on Level, 4,820; on grades, 1 in 100, 1,315; 1 in 50, 730; 1 in 25, 257. These locomotives will be delivered in November.

IMPERIAL JAPANESE RAILWAYS.—The report on the railways reproduced from *Japan Financial and Economic Monthly* is as follows:

"During April, the average traffic mileage was 4,543 miles (an increase of 95 miles compared with figures of the previous year), and the number of passengers is 12,344,567 (an increase of 2,011,849), and the number of freight tons is 1,971,933 tons (an increase of 56,110 tons), and the number of passenger receipts was 4,567,225 *yen* (an increase of 141,104 *yen*) and the freight receipts amounted to 3,160 422 *yen* which shows an increase of 141,258 *yen* compared with the corresponding figures of the previous year. The total receipts amounted to 7,727,647 *yen* which is an increase of 282,362 *yen* over the figures of the previous year. The average daily receipt is 257,588 *yen*, and the receipt per month, per mile, is 1,404 *yen*, while that per mile, a day, is 46 *yen*, 80 *sen*. With regard to the result of business for the month of May, there is a certain amount of increase. The average traffic mileage was 4,543 miles, which is an increase of 86 miles compared with corresponding figures of the previous year. The number of passengers was 4,820,611, which shows an increase of 1,117,572 and the amount of freight is 709,871 tons (an increase of 69,111 tons), while passenger receipts were 1,475,914 *yen* (an increase of 38,807 *yen*), and freight receipts were 1,116,607 *yen* (an increase of 102,889). The total receipts were 2,592,521 *yen* showing an increase of 141,696 *yen*."

The sum of yen 7,020,000 has been appropriated for the fiscal year for railway improvement.

TRANS-BAIKAL RAILWAYS.—The report as published in *Trans-Baikal News* places the receipts of this system for the year 1908 at $4,892,500 and the expenditures $12,875,000.

SLEEPING CARS FOR KYUSHU RAILWAY.—This company has put into commission one large bogie sleeping car, a dining car, and a special car.

TSINGTAO-TSINAN RAILWAY.—The following note was transmitted to the Peking Government by Berlin through the German minister in regard to the proposal of the Peking government to redeem the railway:

"(1) As China has undertaken to complete a line from Teh Chow to Chengting and one from Yenchow or another point on the Tientsin-Poukou branch line, *viz* Tsining Chow to Kaifeng before the end of 1922, and that in the event of her wanting a foreign loan for the purpose of these railways she will first consult with the German and Chinese Corporation in the matter and engage a German Engineer, the Government wishes to make it clear that it is willing to assign the rights of constructing the railway from Kiaochow to Ichow and the one in the West of Shangtung to China and allow the Chinese Government to build the same under the supervision of the Tientsin-Poukou Railway Company. As to the Kiaochow-Ichow Railway the Chinese Government should be consulted as to whether it would not be more advisable to connect the same with the trunk line at Kaomih instead of Kiaochow.

"(2) It should be clearly stipulated that the railway from Kiaochow to Ichow must be completed on or before January 1, 1915, and considered as a Government Railway, and that in the event of China wanting to raise a foreign loan to construct the same she must let the German and Chinese Corporation have the option.

"(3) Germany shall retain the right to work all the mines within a radius of thirty miles from the Kiaochow-Ichow Railway and the one from Tsinan to the west of Shantung as provided by the Treaty of Kiaochow."

DOUBLING SOUTH MANCHURIA RAILWAY LINES.—The doubling of the line for four miles between Cho-shui-tz and Nan-kwan-ling was completed last month.

RAILWAYS OF INDO-CHINE.—The following excerpt is taken from the report of Consul Conner of Saigon.

"The lines already constructed radiate from Hanoi and Saigon, the capitals of Tong King and Cochin China, respectively, with a partially constructed line which will eventually join these centres, passing through and connecting the isolated coastal ports of Annam. From this main trunk various short branches have been built and good many more are in contemplation. In Cochin China the most important of these is the one connecting Saigon and Mytho. Another, which is on paper only, reaches up from Saigon through Pnom Penh, the capital of Cambodia, to Battambang, on the Siamese frontier, and, it is assumed, will be continued eventually to Bangkok. Another projected line, starting from the coast at Quang-Tri, crosses the mountain range at the pass of Ai-Lao, at an elevation of only 676 ft., and strikes into the interior of Laos at a point on the Mekong, or Cambodia River, called Savanaket. The primary object of the trunk line from Saigon to Hanoi seems to be that of military defence. The total mileage of the roads in operation is 819.92. There are in addition 20.42 miles of light railways and steam tramways."

REDUCTION OF LIKIN ON SHANGHAI-NANKING R. R.—Peking has authorized a reduction of from 20% to 50% on likin levied on merchandise shipped over this line.

MUKDEN RAILWAY HOTEL.—It is the purpose of the railway authorities to erect a two-story station building on the site chosen and will set aside one-half of the building for an excellently appointed hotel.

SINGAPORE-KRANJI RAILWAY.—The report for the year 1908 shows capital invested to the amount of $5,037,109 and a falling off in receipts compared with the previous year of $8,594. During the year a station was erected at the 12th mile with a loop line, and the work on the Johore Straits Wagon Ferry has progressed favorably. The dredging was completed and 210 feet of quay wall finished.

TESTS OF SANTA MESA ROPE

The following is the report of the Philippine Forestry Bureau on Santa Mesa rope:

"Three specimens of rope were submitted for testing in June, 1909, by Mr. Johnson, of Johnson and Pickett, Santa Mesa Rope Works, Manila. They were of the sizes commercially known as 2 in., 3½ in., and 5 in.

"The following table of sizes, number of strands, threads per strand, etc., will serve in lieu of detailed description of the different ropes tested:

Sizes Commercial.	Number of strands.	Number of threads per strand.	Number of threads in core.	Weight per 100 ft.	Amount of oil per picul (137.5 lbs.)
2″	3	10	No core	12.7	1.5 gal.
3½″	4	32	8	41.7	1 gal.
5″	4	45	10	80.6	1.5 gal.

"NOTE:—Figures in last column designate amount of oil added to picul (137 5 lbs.) of air-dried hemp.

"Three tests were made of each size, except the 2″ rope. This was tried first with the hangman's noose around an iron bar with a groove of the exact width of the diameter of the rope and afterwards with the rope held between flat clamps. As it was found that the rope always broke in the knot, and at a tension somewhat below that at which it broke in the clamps, the latter figure is the one given in the results of the tests. It might be stated here that the lowest breaking strain of the 2″ rope as tried with the hangma 's knot was somewhat over 3,000 lbs.

"The 3½″ rope and 5″ rope were held between grooved clamps, deeply cross-hatched on the clamping surface, such as are used for testing round and polygonal metal bars, and the 2″, as stated above, in similar flat clamps. The two larger sizes were deformed very little by the pressure of the grooved clamps and the 2″ rope was compressed to something between ¾ and ½ its original diameter by the flat clamps. All specimens measured from 1′ to 1′ 6″ between clamps. The clamps are six inches long. There was very little slipping through the clamps.

RESULTS.

Test No.	Breaking load in lbs.	Kind of rupture.
2″ Rope, (flat clamps.)		
1	4,000	1 strand at edge of clamp.
2	4,050	1 strand at edge of clamp.
3	4,060	1 strand at edge of clamp.
Average	4,037	
3½″ Rope, (grooved clamps.)		
1	16,000	1 strand broke, two damaged, 4th strand whole.
2	16,250	2 strands snapped; other two slightly injured.
3	16,670	2 strands snapped, other two partly broken.
Average	16,273	
5″ Rope. (grooved clamps.)		
1	22,960	1 strand snapped, 2 injured, 1 whole.
2	23,775	2 strands snapped, 1 damage, 1 whole.
3	24,440	2 strands snapped, 2 badly damaged.
Average	23,728	

(Sgd.) EDWIN F. SCHNEIDER
Manager, Timber Testing Laboratory, Bureau of Forestry.

TRADE OF HONGKONG

The report of the Harbor Master, submitted to the Legislative Council of Hongkong, shows a falling of tonnage, but an increase in the number of ships calling at that port for the year 1908. There were 532,078 ships representing 34,614,335 tons, an increase of 24,478 ships and a decrease of 1,413,069 tons. Of the ships 289,101 were British. Flour imports decreased from 147,000 to 91,000 tons owing to the direct shipments made to other ports that were formerly made from Hongkong as a distributing center. The total imports were represented by 4,170,000 tons, a decrease of 4.4% compared with 1907. There was also a decrease of exports compared with the previous year from 2,354,000 to 2,103,000, and transit cargo declined slightly. Sugar imported for the year, amounted to 250,500 tons against 293,500 for the previous term. Of this 178,791 tons came from Java and 50,492 tons from the Philippines. The total revenue of the port for the year was $357,768, and the expenditures 163,597.

CONTRACTING NEWS

Bids Opened for Six Steam Launches for the Quartermaster's Department, Division of the Philippines, on July 15th, follow:

Riley, Hargreaves & Co., Singapore, one launch both sizes each $32,560 gold, two of both sizes; two launches both sizes $63,150 each size; three launches both sizes $93,500 each size.

Hongkong, Whampoa Dock Company, Findlay & Co., agents: Each launch 85 feet in length $17,973 gold each; two launches $35,748; three launches $53,494; one 60-foot launch $11,056; two launches $22,071· three launches $32,947.

Shanghai Dock and Engineering Company, one launch 90 feet, $15,600 gold; two launches $31,200; three launches $46,800; one launch 65 feet, $9,300; two launches $18,600; three launches $27,900.

Castle Bros.-Wolf & Sons, representing Taikoo Dock Yard and Engineering Company of Hongkong, each of two launches 90 feet, $19,120 gold; each of three launches 90 feet, $19,000; each of two launches 60 feet, $10,640; each of three launches 60 feet, $10,575.

Rope bids for 300,000 pounds of rope for the Quartermaster's Department, Division of the Philippines, were opened July 12th as follows:

C. E. Helvie, delivery in San Francisco, 6 and 9 thread rope .1088 U. S. Currency per pound; 12 thread 1037; 1¼ to 3 in. 0984.

H. R. Cooper representing Santa Mesa Rope Works C tread up to including 2 in. 15 centavos a pound; 2½ in. to 8 in. .146 centavos delivered in Manila.

William H. Anderson & Co. for all sizes, .0761 U. S. Currency delivered in Manila, free entry.

H. L. Heath, delivery in Manila Bay, all sizes, .1610 Philippines currency per pound.

Lambert, Springer & Co. .1424 Philippines currency per pound for all sizes, delivered ship's side Manila, free entry.

Bids for the repair of the Transport Warren were opened at the Chief Quartermaster's Office, Division of the Philippines, on July 10th as follows:

Shanghai Dock and Engineering Company $69,240 gold, to be completed 12 weeks after delivery of the vessel at Shanghai; New Engineering and Shipbuilding Works, Ltd., of Shanghai, $159,481 gold, to be completed in 5½ months; Castle Bros.-Wolf & Sons, representing Taikoo Dock Board and Engineering Company of Hongkong $90,184 gold, to be completed in 8 months; Hongkong and Whampoa Dock Co. $88,366, to be completed in 9 weeks; Tanjong Pagar Dock Board of Singapore $102,500 six months' time. The contract was awarded the Shanghai Dock and Engineering Co.

The contract for the supply of 40,000 barrels of cement to the Philippines Government was awarded Messrs. Smith Bell & Co., representing the Haiphong Dragon Brand of cement. The price was ₱4.16.

Bids for the construction of a laboratory at Los Baños were opened at the Bureau of Public Works, Manila, as follows:

M. B. Zarate, ₱8,780.00; Choy & Company, ₱12,300.00; J. A. Valera, ₱7,954.00.

The contract for the erection of a new steel hose tower at Santa Cruz station, Manila, was awarded the Atlantic Gulf and Pacific Company. The price was ₱9,470.

Bids for the construction of two bridges at Dagupan, P. I., were opened at the Bureau of Public Works, Manila, as follows:

The Atlantic Gulf and Pacific Company, ₱85,450 for the Calmay bridge and ₱39,790 for the Pantal bridge to be completed in 365 days; R. M. Loper bid on part of the work at 15% on cost of labor and materials and wanted 450 days to complete the work.

The contract for the supply of 60,000 tons of coal to the U. S. Army has been awarded the Mitsui, Bussan Kaisha. Their prices were $4.47 shipside and $4.74 on dock.

The contract for the supply of 5,000 gallons of gasoline to the Quartermaster's Department, Division of the Philippines, was awarded the Standard Oil Company. The price was 50 cents a gallon.

The following were the bids submitted for the construction of the six wooden lorchas for the Quartermaster's Department, Division of the Philippines, and opened June 26th: The Hongkong and Whampoa Dock Company, $22,800; Fred Wilson & Co., $28,600; Varadero de Manila, $32,000; Juan Rodriguez, $35,300; Che Chung, $36,500.

There were many tenders submitted for the supply of bridge girders to the Tientsin-Pukow R.R. of whom Messrs. Jardine, Matheson & Co. were the lowest and Messrs. Buchheister next. The prices have not been learned.

Messrs Holden & Brook were the successful bidders for the contract to supply the Shanghai Municipality with a feed water heater. Their price was £116. 18s. and the other bidders were Messrs. Babcock & Wilcox Ltd., £155, and Messrs. J. Wright & Co., £192.

The Shanghai Dock and Engineering Co. has secured the contract for the repair of the Shanghai municipal dredger. The price was Tls. 628.

The Tientsin-Pukow R.R. has advertised for tenders on the supply of 20,000 casks of cement to be delivered at Pukow by August 31st.

The contract for the construction of the Naval Dock at Pearl Harbor has been awarded the San Francisco Bridge Company. The price was $1,760,000.

The Depot Commissary of Manila has advertised for tenders for the supply of 600,000 lbs. Rice; 230,400 lbs. Sugar, granulated; 40,000 lbs. Butter, 1-lb. prints; 1,000 cans Cheese, full cream; 3,600 cans crackers Soda; 1,200 bots. Ginger Ale; 5,400 cans Jam, assorted, lac; 1,000 bots. Oil, olive; 720 bots. Salt, table; 3,600 cakes, Soap, toilet, Glye; 24,000 bots. Water, effvt. These bids will be opened July 26th.

The following tenders were submitted for the construction of light twin screw river steamer for the Chief Quartermaster, Division of the Philippines:

Shanghai Dock and Engineering Company, $29,250 gold; Kwang Shang Lung & Co., $78,500 Mexican currency; New Engineering and Shipbuilding Works, Shanghai, $28,900 gold; Tanjong Pagar Dock Board, Singapore, $35,000 gold; Riley, Hargreaves & Co., Ltd., Singapore, $72,500 Straits Settlement currency, with alternate bid of $77,000 for larger engines giving greater speed; Hongkong and Whampoa Co., $27,713 gold.

HAIHO CONSERVANCY CONTRACTS.—The contract for building four small tugs for the conservancy was awarded the Kiangnan Dock Co. of Shanghai the price for the four vessels being Tls. 80,000. There were in all 45 bids submitted out of which 33 bids were thrown out for not complying with specifications and the remaining bids simmered down to the Kiangnan Docks and the New Engineering and Shipbuilding Works, their respective bids being almost equal.

There were 21 bidders for the construction of the 500 c/m dredger ranging from $120,500 to $235,000. The contract was awarded A. F. Smilders of Schiedam, Holland, at £32,650.

TIENTSIN-PUKOW RAILROAD.—Steel Truss Girders.—Tenders invited for the supply of the following steel truss girders:—Indent 62—4 Spans of deck girders, 100 feet clear span. 3 Spans of through girders, 200 feet clear span.—Indent 63—7 Spans of through girders, 200 feet clear span, or any less quantity.

The above to be executed in accordance with the instructions and to the satisfaction of Messrs. Baker and Hurtzig, of 2 Queen Anne's Mansions, Westminster, from whom full particulars, specifications and drawings can be obtained and without whose certificate no work will be accepted.

The girders to be delivered ex Ship's Slings on the Railway Wharf a Pukow at the sole risk of the contractor and free of all charges except duty, on or before the following dates:—Indent 62—on or before 31st July, 1910.—Indent 63—on or before 30th September, 1910.

Payment will be made in sterling in Shanghai or London at the contractor's option 10 days after the acceptance of each complete indent.

Tenderers must quote in sterling and the names of proposed makers must be stated.

Tenders should be addressed to the Managing Director, Tientsin-Pukow Railway, Southern Section, Nanking, and should be clearly marked on the outside "Tenders for Indents 62 and 63, Steel Truss Girders." They should reach this office on or before Tuesday, 14th September, 1909.

Tenders will be publicly opened at 10 a. m., on Wednesday, September 15th, 1909.

The Managing Director does not bind himself to accept the lowest or any tender.

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*PROPOSALS FOR CONSTRUCTION OF SEA-GOING TOWBOAT:—Headquarters Philippines Division, Office of Chief Quartermaster, Manila, P. I., July 12th, 1909. Sealed proposals, in triplicate, subject to the usual conditions, will be received here until 10:00 a.m., August 30th, 1909, and then opened, for the construction and delivery to this department complete and ready for service, one Sea-going, single screw, Towboat. Blank forms and full information will be furnished upon application to the United States Consular representative at Hongkong, Shanghai and Singapore, and the Chief Quartermaster, Philippines Division, Manila, P. I. Proposals should be enclosed in sealed envelopes, endorsed "Proposals for Towboat, to be opened at 10:00 a.m., August 30th, 1909," and addressed to the Chief Quartermaster, Philippines Division, Manila, P. I.

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*ADVERTISEMENT.—CITY OF MANILA.—OFFICE OF THE MUNICIPAL BOARD.—Manila, P. I., June 17, 1909.—Sealed proposals will be received at this office until 11 o'clock a. m. of the 2nd day of August, 1909, and then publicly opened, for furnishing all the materials, work, and machinery of every sort, and for constructing complete one steam launch in accordance with specifications and to the satisfaction of the City Engineer.

Each bid shall be accompanied by a certified check made payable to the city of Manila or cash in the sum of five hundred (₱500.00) pesos, Philippine currency, as a guaranty that the contractor will within ten (10) days, if awarded the contract, enter into contract with the city of Manila for the faithful performance of all the work herein specified.

A bond or guaranty in favor of the city of Manila, in an amount equal to ten per centum (10%) of the accepted bid, and to the satisfaction of the Municipal Board, will be required for the faithful performance and completion of the contract to the satisfaction of the Engineer by December 31, 1909.

Printed forms for bids, specifications, and all necessary information may be obtained at the office of the Engineer, Manila, P. I., and at the American Consulates at Hongkong, Shanghai, and Singapore.

The right is reserved to reject any or all bids, and to waive any defects. By direction of the Board:—H. L. FISCHER, *Secretary*.

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*Advertised in the FAR EASTERN REVIEW.

China, Manchuria, Japan, Indo-China, Siam, Straits Settlements, Malay States, Burma, India, Malaysia, and the Philippines

ILLUSTRATED FEATURES Rulers of China.—Reinforced Concrete to Supersede Nipa Construction.—New Manila Hotel.—Headwaters Mining Co. : : : : : : : : : : : : :

THE FAR EASTERN REVIEW

VOL. VI: No. 3. MANILA, SHANGHAI AND YOKOHAMA, AUGUST, 1909. 25 cents U. S. Currency 50 " " Philippine Cy.

THE RULERS OF CHINA

The Power Behind the Throne

His Excellency, CHANG-CHIH-TUNG
The Grand Old Man of China, Grand Secretary, Grand Councillor and President of the Board of Education

ENGINEERING
COMMERCE FINANCE

RULERS OF CHINA

H. E. CHANG CHIH-TUNG,

The Grand Old Man of China.

His Excellency Chang Chih-Tung is considered the most erudite scholar of the Empire, and by some her foremost diplomat, but if we accept the opinion of the *London Times* Correspondent, the appellation of "The Grand Old Man of China," is far fetched and instead, his sobriquet should be "The Supreme Muddler."

Possibly both pseudonyms are applicable according to the viewpoint from which his record is judged. As a scholar, teacher, expounder of the classics, and advocate of Reform for China, the former title is assuredly his, but as a practical politician or executive dealing with affairs of international importance, Dr. Morrison's characterization sums up his capacity from the British standpoint. China owes much to the venerable statesman, and his favorable attitude towards foreign nations has earned for him their respect and confidence. His pamphlet directed to the Chinese people entitled "Learn" was the first document from a high official urging his countrymen to cast off their old antipathy and learn foreign methods so that in time China could combat the foreigner with his own weapons. After closely showing the needs of the Empire the writer proceeded to give practical advice regarding the reforms to be introduced.

In his treatise he favored the study of modern sciences and foreign study together with the establishment of new schools throughout the Empire and new methods of instruction. Foreign teachers, he urged, should be dispensed with, but not foreign books which are of inestimable value translated. Newspapers should be encouraged, the laws revised, examinations reformed, and instruction in agriculture, industry and commerce directed into new channels. The reorganization of the army, development of mining, construction of railways were also commended. Chang recognized the deplorable weakness of his country and admitted that even Cuba was stronger and warned his countrymen that if reforms were not initiated China would share the fate of India, Poland, Egypt or Corea.

Chang's career dates back to 1863 when he graduated Tertius at the Metropolitan Examination, and was soon ordered to the Bench of Kuantung. His first executive post was Governor of Shansi in 1882 and since then he has held the viceregal posts at Canton, Wuchang, Nanking, besides being appointed Junior Guardian of the Heir Apparent, High Commissioner of Commerce, Grand Secretary, Grand Councillor, Comptroller General of the Board of Education and Director General of the Hankow-Canton Railway.

His Excellency is the scholar of the Government at Peking. No one can excel him in drawing up elaborate and intricate regulations and giving the proper tone to Imperial edicts. The importance of education as the keystone for the regeneration of the Empire, so strongly urged by him in his appeal, was approved by the Throne, and under his guidance the establishment of schools and a modified system of instruction is being energetically encouraged. Chang as Grand Councillor is one of the Powers that Be in Peking, but his age is beginning to tell, and he will soon have to give way to a younger man. He has already petitioned for permission to retire, but the Regent is holding to the old experienced councillors, until suitable successors can be found.

H. E. CHANG JEN-CHUN
TRANSFERRED FROM THE VICEROYALTY OF THE LIANGKWANG PROVINCES (CANTON) TO THAT OF THE LIANGKIANG (NANKING)

H. E. TUAN FANG
TRANSFERRED FROM THE LIANGKIANG VICEROYALTY TO VICEROY OF CHIHLI, THE METROPOLITAN PROVINCE, ORDERED TO REPORT TO PEKING, AND IT IS RUMORED THAT HE WILL BE RETAINED THERE ON THE GRAND COUNCIL.

H. E. HSI-LIANG,
RECENTLY TRANSFERRED FROM THE YUN-KUEI VICEROYALTY TO VICEROY OF MANCHURIA. CAPITAL AT MUKDEN

H. E. NA TUNG.
ACTING VICEROY OF CHIHLI. SECOND PRESIDENT OF THE WAIWUPU, GRAND SECRETARY, ETC.

H. H. PRINCE SU,
PRESIDENT OF THE BOARD OF INTERIOR, ETC.

H. E. TIEH-LIANG,
PRESIDENT OF THE BOARD OF ARMY.

The Secretary of War for China, His Excellency Tieh-Liang is, as his name indicates, a Manchu, and one of the most conservative and reactionary officials in Peking. His official career, which began by his purchase of an office, has been centered in the capital. Since 1901 when the Constitutional movement was inaugurated, Tieh-Liang was President of the Board of Revenue or Treasury, and under his leadership an immediate effort was made to check the reforms at their inception. During the absence of Yuan Shih-Kai at the autumn army maneuvers in 1906, Tieh-Liang and three of his conservative clique influenced the Empress to appoint them to the Grand Council, and the fate of the reform movement seemed doomed, when Yuan hurried back to the capital, interviewed the Empress, and exacted a new decree, the first clause of which cancelled the recent appointments to the Grand Council, which was followed by the order that the administrative reforms must be acted on and carried out.

In the shuffle of posts following the edict, Tieh-Liang secured the Ministry of War, or head of the Army, and as Yuan Shih-Kai was Commander-in-Chief of the Manchu Garrisons at Peking, and four divisions of modern drilled troops in Chihli, his enemy obtained a temporary advantage over him. The Board of Army was directed by four Manchu officials but Yuan's strength was so great that they were powerless to seriously interfere with his troops.

Since the downfall of Yuan, which was assisted by the intrigues of Tieh-Liang, the latter has also fallen in prestige and the next shuffle will find him relegated to an obscur post.

Reports from Peking state that after the Imperial deaths, and the elevation of Prince

H. E LI CHING-HSI,
THE NEW VICEROY OF THE YUN-KUEI PROVINCES.

H. E. YANG SHIH-HSIANG.
THE LATE VICEROY OF CHIHLI, THE METROPOLITAN PROVINCE. CAPITAL AT TIENTSIN.

he has successively held many of the highest offices of the Empire, but it was not until he clashed with the progressive Yuan Shih-Kai that the attention of foreigners was directed to his actions. As the leader of the reactionary party in Peking he steadily opposed all measures of reform and especially the steps towards future constitutional government. In 1906

HIS EXCELLENCY CHAO ERH HSUN,
VICEROY OF SZECHUEN. CAPITAL AT CHENG'TU

HIS EXCELLENCY CHEN CHAO-CH'ANG
GOVERNOR OF KIRIN PROVINCE, MANCHURIA

H. E. SUNG SHOU
VICEROY OF THE MIN-CHE PROVINCES (FUKIEN AND CHEKIANG)
CAPITAL, FOOCHOW

H. E. CH'EN K'UEI-LUNG
VICEROY OF THE HU-KUANG PROVINCES (HUPEI AND HUNAN). CAPITAL AT WUCHANG

H. E. SHENG YUN,
THE EX-VICEROY OF THE SHEN-KAN PROVINCES (SHENSI AND KANSU) AND HIS CHIEF OFFICIALS

Chun to the Regency, Tieh-Liang and two of his Manchu associates hatched a conspiracy to overturn the new régime, and have Kuang Hsu's wife, the present Empress Dowager, "drop the curtain" and take over the reins of government, following the example set by her predecessor. With the army under his orders, Tieh-Liang would support the new ruler with force, and assure her position, and at the same time become the leading power in the new reign. The plot was made abortive by the refusal of the Empress Dowager to assent to it, and fearing punishment the conspirators hastened to absolve their action to the Regent by placing the blame on each other, in the endeavor to reinstate themselves in favor.

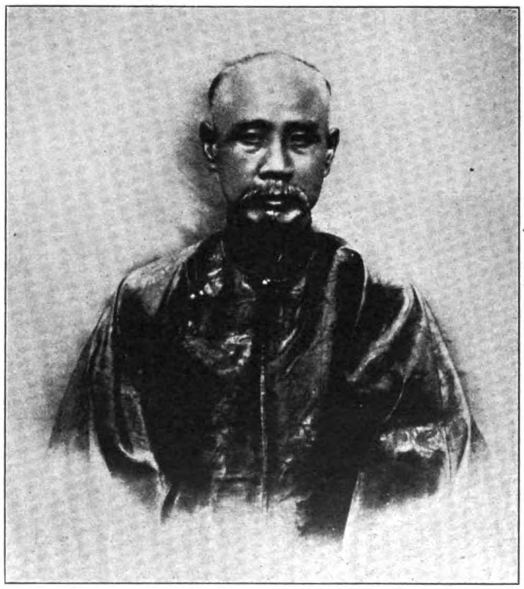
will be ordered as Military Governor of Ili in Chinese Turkestan, which in other words means banishment from the Court.

If these reports are true, and they are not denied, Tieh-Liang in his dream of power and desire to be as great as his enemy, Yuan, has fallen from grace, and will spend his days in exile.

H. E. TUAN FANG

VICEROY OF CHIHLI.

When Yuan Shih Kai was dismissed from his high offices, it was feared that China had not another man of equal ability to fill his post, and carry through the many essential reforms rivalling all others in the Empire. Tuan-Fang, the Manchu Viceroy of Nanking, had followed in the footsteps of Yuan at Tientsin and inaugurated many new reforms, organized and equipped three divisions of the modern army, and in many other ways demonstrated his capacity as a progressive ruler. The career of this official has been one of rapid promotion. For a long time he held the post of Senior Secretary of the Board of Works at Peking and in August, 1908, was appointed Administrator General of Trade and Agriculture. In November of the same year he was promoted as provincial judge, and in October, 1899, made Treasurer of Shansi, and transferred to the same post in Honan in 1901. In May, 1901, he was



H. E. MAO CHING-FAN,

TREASURER OF KANSU PROVINCE AND ACTING VICEROY OF SHEN-KAN. CAPITAL AT HANCHOW

H. E. YUAN SHU-HSUN,

PROMOTED FROM GOVERNOR OF SHANTUNG TO VICEROY OF THE LIANG KUANG PROVINCES (KUANGTUNG AND KUANGSI). CAPITAL, CANTON

That there is some truth in this is apparent from the constant reports from Peking concerning Tieh-Liang's transfer. From time to time it has been reported that he has applied for the post of a Viceroy, first at Wuchang and again at Tientsin. Then we hear that he has petitioned to be permitted to proceed to Kansu to reorganize the Army, and the latest rumor is that he

that stand for progress and fair dealing with the foreigner. In scanning the limited political horizon of Peking, none of the officials loomed large enough to fill the vacancy left by the energetic Yuan, but to the south, in the old southern capital of the Empire, there was one who quietly and without ostentation had been doing things and making a reputation out-

promoted to Governor of Hupei, holding the post till May, 1905, when he was shifted to Kiangsu, and in December of the same year to Honan. In the following year he was selected as a member of the Imperial Commission to Foreign Countries to study Constitutional Methods, and on the report of the body is based the present plan for a constitution for the

Empire. In September, 1906, he was ordered to the Viceregal Chair at Nanking and in the last three years he has made a high reputation as a progressive executive. The *Shanghai Times* commenting on his record, says:—

"The work of the retiring Viceroy, Tuan

H. E. CHEN-PI,
THE CASHIERED PRESIDENT OF THE BOARD OF COMMUNICATIONS

Fang, during his tenure of office at Nanking, has been of such an unusual character as to attract a large measure of public attention to him. He became well-known to foreigners during the Boxer outbreak in 1900, when he

H. E. KAO LING-WEI,
COMMISSIONER OF EDUCATION, HUPEI PROVINCE

succeeded in saving the lives of many missionaries by allying himself against the forces of disorder. When he was transferred to Wuchang as Governor, he found a warm welcome from

H. E. LING FU-PENG,
GOVERNOR OF SHUNTIEN-FU (IMPERIAL PREFECTURE OF PEKING)

H. E. SUN CHIA-NAI,
GRAND SECRETARY, PRESIDENT OF SENATE, ETC.

foreign officials and residents, and during the seven years of his sojourn in the Yangtze Valley he has fully realized the high hopes which were expected of him. His trip to Western countries as Commissioner for the Investigation of Constitutional Government, brought him into relationship with many of the leading statesmen of Europe and America. The impression which he made during his extended trip was most favor-

H. E. SHENG HSUAN-HUAI
(SHENG KUNG PAO)
HIGH COMMISSIONER FOR TREATY REVISION

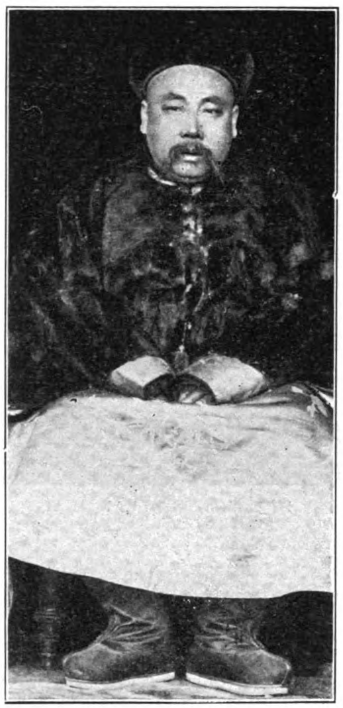
able for his own country, and did much to give himself a new outlook upon affairs not only of his own country, but also of the countries having Treaty relations with China.

"During the last three years in Nanking, in addition to his encouragement of schools and his attention to financial matters, he has shown a keen interest in all attempts to improve the condition of the people of these three Provinces

LEE MING-TSUN,
TREASURER OF HUPEI PROVINCE

The completion of the Shanghai-Nanking Railway was taken advantage of by him as an opportunity for opening a City Railway con-

necting the heart of the City with the railway terminus and the steamer landing. He laid out plans for a public park in the northern part of the City, where there is so much farming land, and planned to hold in this park the Nanyang Industrial Exhibition which is due to be opened next May. The Army maneuvers which were carried out last Autumn were largely due to his initiative. It was a favorable opportunity to show how much had been done



HIS EXCELLENCY CHOU SHU-MU,

GOVERNOR OF HEILUNGKIANG PROVINCE (TSITSIHAR); A NATIVE OF HUPEH PROVINCE; WAS COMMISSIONER OF EDUCATION OF KIANGSU PROVINCE IN MAY 1906; PROMOTED TO SENIOR SECRETARY TO GOV'T OF FENGTIEN PROVINCE IN MAY '07, AND TO HIS PRESENT RANK IN MARCH, 1908

in bringing up the standard of the troops under his jurisdiction. Viceroy Tuan attended the opening of the Opium Commission last February as Special Imperial Commissioner. His opening speech, though much criticised at the time, has come to be considered as a fair statement of the desires of the Chinese Government in controlling the traffic in opium. The constant interest taken by the Viceroy in literary and artistic matters has been a delight to those who have been fortunate enough to see some of the art treasures which he has brought together. His purchase of the famous Classical Library from Chekiang, and his building of a handsome structure to provide a permanent home for it, will make it certain that his patronage of letters will be long remembered by the literary men of these Provinces."

The transfer of Tuan Fang to the premier Viceroyalty of China is accepted as the first step to his further promotion to the Grand Council and higher posts at Peking. The venerable councillors, Chang Chih-Tung, Lu Chuan-lin and Prince Ching, will soon have to retire from age, and younger men admitted. In Tuan Fang, the Regent has made a wise selection, for while a Manchu and conservative, he is heartily in favor of progress, has the confidence and respect of foreigners, and is fully committed to the constitutional movement.

H. E. CHANG JEN-CHUN

The new Viceroy of the Liang-Kiang Provinces (Kiangsu, Kiangsi, and Anhui.)

The new viceroy at Nanking is a native of Chihli Province. Although a Metropolitan Graduate of 1868, it was not until 1889 that he attained any prominent official post when he was appointed Taotai of Kuelin, the capital of Kiangsi. In 1894 he was promoted to Judge of Kuangtung, and Treasurer in 1896, and transferred in 1898 as Treasurer of Shantung. In 1900 he was Director General of Grain Transports, and in the following year received his first executive post as Governor of Shantung on the promotion of Yuan Shih-Kai to Tientsin. Since then he has successfully been governor of Honan, Kuantung, Shansi, Honan, and promoted to the Canton Viceroyalty in August 1907.

His record at Canton has earned for him the cordial friendship of foreigners, and his promotion to Nanking is well merited. The Tatsu Maru incident followed shortly after his taking over the office, and although China had to recede from the position taken, there is no doubt that the mere fact of a Chinese vessel having the temerity to overhaul a Japanese steamer had a great moral effect on the nation, and the Canton Viceroy reaped the benefit of the episode.

The *Hongkong Telegraph* in summing up the record of Viceroy Chang at Canton says:—

"The promotion of His Excellency Chang Jen-chun, Viceroy at Canton, to the Viceroyalty of the Liang Kiang in succession to H. E. Tuan Fang, at the present juncture is a circumstance which will be regretted by those who have followed with intelligent interest His Excellency's short course of administration in the neighbouring province. Following the government of the veteran Cho Fu, who succeeded the energetic and redoubtable Shum in the Viceregal yamen at Canton, Chang Jen-Chun within the first weeks of his administration was brought face to face with an international problem which at one time threatened to be so acute as very nearly to strain the good relations between the two neighbouring friendly Powers of China and Japan. We allude to the 'Tatsu Maru' affair, which might well be now relegated to the limbo of the forgotten past but for its connexion with the initiation of the administration of the subject of our notice. More closely connected with Hongkong, however, His Excellency Chang was brought into prominence soon after his arrival at the Southern Capital by reason of his negotiations with Admiral Sir Arthur Moore for the suppression of piracy in the Canton Delta. How successful those negotiations had been was seen in the arrangement concluded with the then Commander-in-Chief of the British South China Squadron, which provided for a fleet of patrol launches and guard-boats, besides large fast-steaming cruisers for the efficient policing of the waters of the West and Pearl Rivers. Though the exchange of communications between the Government of Hongkong and Canton in the matter of subsidiary coinage has not resulted to the entire satisfaction of British merchants and traders in this Colony, it must be conceded that, yielding to the representations in the interest of the Colonial Government, Viceroy Chang ordered the temporary stoppage in the minting of small coins in conformity with the undertaking made to Sir John Jordan by the Ministry of Foreign Affairs in Peking. It was not until the mercantile class in Canton urged for a greater output of the silver tokens within the province that the provincial mint renewed the normal output of the subsidiary currency, which, unfortunately, continues to find its way in large quantities into this Colony. As manifesting the cordial relations which have subsisted between the two interdependent ports of Canton and Hongkong, the present Viceroy has done more to assist in the building of the Chinese section of the all-important Canton-Kowloon Railway than any of his predecessors. Fully alive to the necessity of rapid communication between the two neighbouring tradal centers, and anxious to promote the interests of the inhabitants of the vast territory under his administration, the aged Viceroy took that lively personal interest in the commencement and building of the railroad that has gone far to the early completion of this most important undertaking. Not only does the Viceroy seek the material progress of his people, but he is ever watchful of their moral and intellectual well-being. Abundant evidence of this fact is found in the tangible proof he has just recently furnished in the matter of education. So thoroughly sympathetic has His Excellency Chang Jen-chun been towards the Hongkong University project, which is destined to be of such incalculable benefit to the Chinese people, in particular to those of South China, that he has come forward with a promised donation of $200,000 subscribed by the provincial departments of his Government and is believed to be exerting his influence to secure another like amount from the mass of the people in Kwangtung and Kwangsi. It is to be hoped that His Excellency Chang will translate his practical sympathy towards the University scheme to the new sphere of his

H. E. P'U-SHOU,

TARTAR-GENERAL, FOOCHOW

activities and thereby secure from the wealthy gentry and populace of the rich province of Kiangsu the same measure of support that has been forthcoming from Canton. Another instance of his friendly attitude in his foreign relations may be cited in the assistance which he and his Government tendered to the Italians who suffered by the terrible calamity which reduced Messina to ruins in the earthquake at the beginning of this year. When his own provinces were visited by disaster, such as the catastrophic floods and devastating typhoons of last year, the sympathetic Viceroy showed himself most solicitous of the necessities of the Chinese who were reduced to frightful straits. He did not content himself with receiving reports from his subordinates, but Viceroy Chang made a point of personally visiting the shocking scenes of distress and alleviating all whom it was within his power to succour. Not only have the inhabitants of Kwangtung evoked his interest and sympathy in their hour of trial and distress, but in matters commercial also he has worked indefatigably in their interest. There are evidences that under the wise administration of the retiring Viceroy, Canton has progressed as both a commercial and industrial centre."

H. E. NA TUNG

The acting Viceroy of Chihli, pending the arrival of Tuan Fang, is the second President of the Board of Foreign Affairs and Grand Secretary, Na Tung.

A Manchu of the Conservative party occupying some of the most important offices in Peking, he is best known through his connection with the Board of Foreign Affairs. He was Minister of the old Tsung-li-Yamen and shortly after its reorganization into the present Wai-wu-pu, he was appointed as its President.

H. E. TIEH LIANG,
PRESIDENT OF THE ARMY BOARD, ETC.

During the Boxer disturbances of 1900, Na Tung was one of the chief supporters of the movement, and it is asserted that his life was demanded by the Powers on the conclusion of peace, but Japanese influence saved him from the death penalty. Na Tung has many bitter enemies, especially among foreigners who will never forgive his participation in the Boxer uprising. On the other hand it is also claimed that since his life was saved he has materially changed his former views and to-day, while still conservative, he is not unfavorable to progress or reform in some directions.

It is claimed that since his return from the special embassy to Japan in July, 1901, he has come under Japanese influence, and the fact that he owes his life to the same Power lends color to the report.

H. E. HSI LIANG

VICEROY OF MANCHURIA.

From the foreign point of view, the most antipathetic character amongst the present viceroys of China is the new incumbent of the post at Mukden, His Excellency, Hsi Liang. Not so much from his pronounced anti-foreign sentiments is due this cordial dislike, but from a knowledge that he is an incompetent wire puller, who has achieved his advancement through the timeworn custom of exaggerating the difficulties of his work to reflect more credit on himself.

A hard shell reactionary and conservative, deeply anti-foreign, opposed to progress in any form, Hsi Liang, the Mongol Viceroy of Yunnan, was selected by the Regent to fill the most difficult post in the Empire, and succeed one of the most progressive rulers of the present generation. For under H. E. Hsu Shih Chang, Manchuria was governed with a view of developing its resources, and promoting the welfare of the people, surrounding himself by the most brilliant foreign educated officials to assist in the task of bettering conditions, and solving the many important political issues between Japan and Russia. Such men as Tang Shao Yi, Liang Ju-hao, Shih Shao-chi, Chou Chang-Ling, Key Tsu-Yi, and other foreign educated officials, were almost a guarantee that progress would be made, and their employment in Manchuria was hailed by foreigners as denoting a new turn of affairs.

The appointment of Hsi Liang to succeed Hsu Shih Chang came as a great surprise, as his record inspired distrust. From the time of his appointment in May 1896 as Taotai of Yenchowfu, his record shows a constant shifting around from post to post, never filling any of them the full term of office. In January, 1898, we find him as Taotai of Taiyuanfu, in November of the same year promoted to Judge of Shansi and in three months over he goes as Judge of Honan, which he holds for one month when he is made Provincial Treasurer. This post he held until October, 1900, when he was promoted as Governor of Shansi. In June, 1901, he was made Director General of the Yellow River works, and in a few months also found time to act as Governor of Honan. On the abolition of the Yellow River sinecure, he was made full Governor of Honan in March, 1902, which post he held for two months when he was shifted to Jehol in May as Lieut. Governor. In May, 1903, he received his first Viceregal Commission to proceed to the Min-Che provinces which true to his record he held for the long space of two months, for in June, 1903, we find him sent as Acting Viceroy of Szechuen and in December, 1904, he was made full viceroy. This post evidently suited him as he remained there until March, 1907, when he was transferred to the adjacent province of Yunnan. His transfer in February of this year to Manchuria rounds out his interesting official career.

During his entire official career his real capacity was called on and taxed only once. While Viceroy of Yunnan a rebellion broke out in the southern part of the province which could have been easily put down at the outset had any real effort been made. But it was allowed to drag along and no serious attempt made to check it, so as to give undue importance to the Viceroy's task. Complications arose with the French Government of Tongking, whose territory had been invaded by the Chinese troops in pursuit of the rebels, and on the strength of this one incident, Hsi Liang's reputation was greatly enhanced, and made him a marked man at Peking. So, when in the opinion of the Regent the situation in Manchuria demanded a change of Viceroys, and in casting about for a strong character, the man who had successfully sent his soldiers into Tongking and defied France loomed large among the other do nothing governors, and he was sent for and ordered to Mukden to "humble" Russia and Japan as he had France.

His entrance into Mukden dispelled at once any ideas that were entertained about his capacity for handling the situation in the province where an enlightened policy is imperative to offset Japan's and Russia's schemes. Eye witnesses of his arrival at the Manchurian capital state that when met by all his officials at the railway station, and a carriage ready for his conveyance to the Yamen, he very curtly refused to ride in it and insisted on being provided with a sedan chair. The new foreign style Government House at Mukden, and the fine macadam road leading to the station next aroused his ire, and when he found that the official day was regulated to meet the demands of foreign consuls and common-sense between the hours of 9 a. m. and 4 p. m. he ordered a reversal to the hours of 4 a. m. to noon. The Regent and Grand Council, behind the palace

H. E. LIN SHAO-HIEN, VICE PRESIDENT IN CHARGE OF GRANARIES. (2ND FROM LEFT, SEATED); H. E. LU CHUAN-LIN, GRAND SECRETARY, GRAND COUNCILLOR, ETC. (3RD FROM LEFT, SEATED); H. E. CHANG CHIH-TUNG, GRAND SECRETARY, GRAND COUNCILLOR, ETC. (4TH FROM LEFT, SEATED); H. E. HSU SHIH CHANG, PRESIDENT OF BOARD OF COMMUNICATIONS (5TH FROM LEFT, SEATED)

walls of Peking, where no official business with foreigners is transacted adhere to the old custom of beginning the day at 3 a. m., and what is right for them, must be right for Hsi Liang and Manchuria, and if foreigners cannot accommodate themselves to these odd hours, so much the worse for them.

The following communication in the L. & C. Express, from a Correspondent in Mukden, gives some interesting sidelights on the character of the new Viceroy:—"A Governor was sent lately from Peking to Mukden who is a Machun of the old school, detesting Westerners and all their ways. Shortly after his installation he called the members of the Civil Service together and addressed them as follows:—'As far as I can see there are too many of you officials; you are too highly paid, and don't work hard enough. I mean to dismiss half of you, and reduce the pay of the rest. I observe that many of you wear silk robes and ride in broughams or other new-fangled conveyances, which you ought not to be able to do on your salaries. Now, in future, be careful! Wear cotton and ride in sedans, or you will be dismissed. If I should make a mistake in my policy you are enjoined by me to speak up, and tell me frankly how I have erred. I have nothing further to say on this occasion except that if I catch any of you tripping, by——I'll have his head off! Now go home and think of what you have heard, for I mean it.'"

Such is the official the Regent has selected for the most difficult post in the Empire. The brusque, intolerant attitude of the viceroy may conceal high qualities of statemanship or he may be implicitly following instructions from Peking. In the face of the many problems of vital importance to China centered in the present situation in Manchuria, the world will not be long in gathering a true estimate of the man.

H. E. JUI CHENG
GOVERNOR OF KIANGSU PROVINCE.
CAPITAL, SOOCHOW.

H. E. SUN CHIA-NAI, GRAND SECRETARY, ETC.

H. E. CHAO ERH-HSUN.

VICEROY OF SZECHUEN.

H. E. Chao is a Han Chun, or Chinese Bannerman, and a Metropolitan Graduate of 1874. Rising through the subordinate grades of prefect, taotai, judge, treasurer, and governor, we find him acting and officiating as President of the Board of Revenue at Peking in 1904, and from there as Tartar General or Chief executive of Manchuria in 1905. The intense political struggle waged in this province during his term of office brought Chao into the lime light. Before the aggressive policy of the victorious Japanese, Chao had to yield and quietly acquiesce in many usurpations of China's authority. For this he has been accused of weakness, but under the exceptional circumstances surrounding conditions in Manchuria at that time, it is difficult to see how he could successfully oppose the Japanese attitude. Chao holds the reputation of being very simple and frugal, disdaining ostentatious display, and an advocate of economy in official expenditure. The conditions in Manchuria calling

H. E. HSU SHIH CHANG, PRESIDENT OF BOARD OF COMMUNICATIONS (in the center.)
H. E. PRINCE YU-KANG, HEAD OF ARMY REORGANIZATION BOARD (to the left.)
H. E. CHAO PING CHUN, VICE-PRESIDENT, BOARD OF INTERIOR (to the right.)

for a reorganization of the provinces into a viceroyalty, to safeguard China's integrity, Chao was ordered to Szechuen in May, 1907, and the new régime inaugurated in Mukden. In September, 1907, Chao was made Viceroy at Wuchang and in the following March transferred to his present post in Szechuen. As ruler of this province Chao's main problem is

H. E. CH'ENG TE-CHUAN,
RECENTLY APPOINTED GOVERNOR OF MUKDEN

to keep the warlike Lolos and frontier tribes in check, but this seems to be beyond the military ability of the Chinese troops. His brother Chao Ehr-fang, the Imperial High Commissioner in charge of the Thibetan frontier defenses, with instructions to pacify the marauding barbarians, has for a long time lingered at Batang suffering from frigid extremities, and the pacification of the border tribes is still a dream of the future. The stories from the Heart of Szechuen relating the military prowess of the Chinese troops according to official reports rendered the Viceroy

H. E. CHANG CHIH-TUNG

at Chengtufu, bear a striking likeness to official reports of the Spanish officers during the insurrection in Cuba. But all this is good and sufficient reason for the expenditure of provincial funds, and Peking is a long way off, and the reports of victorious battles, heaps of slain, captured villages and insurgent strongholds make interesting reading, and conclusive proof that the authorities are active and preserving the Empire from serious rebellion.

H. E. YUAN SHU-HSUN,

VICEROY OF CANTON.

The new viceroy of Canton, Yuan Shu-Hsun, is a native of Hunan, and began his official career in January, 1901, as the Ching-chow Taotai, and immediately afterwards was ordered to the important and lucrative Su-Sung or

H. E. TSENG YUN,
GOVERNOR OF CHEKIANG PROVINCE. CAPITAL, HANGCHOW

Shanghai taotaiship. He was twice ordered o other posts but secured powerful influence to remain in Shanghai. Although rated by the Chinese as a capable official, he is regarded as

anti-foreign and reactionary. During his tenure of office in Shanghai, in 1905, the anti-foreign riots occurred which greatly alarmed the settlement, and it is now generally recognized that Taotai Yuan could have suppressed the movement at the start had he been actuated by friendly motives. His attitude on this occasion has justly earned for him the deep resentment and mistrust of all foreigners, and the rapid promotion after his removal from Shanghai has not tended to clear the Central Government from a share in this mistrust.

It is clearly evident that the only important event of his official life elevated him in the estimation of his countrymen, for we find that, instead of a reprimand for neglect to hold in

H. E. CHOU FU,

EX VICEROY OF LIANGKIANG, MIN-CHE LIANG-KWANG PROVINCES, ETC. AWAITING APPOINTMENT

check the forces of disorder, he was actually promoted to the choice post of Governor of Shuntienfu, the Imperial Prefecture of Peking. However, he did not proceed, and we find him summoned to Peking later on, and in February, 1908, promoted to the still higher post of Senior Vice-President of the Board of Interior, two months afterwards to the Governorship of Shantung Province, and in July to the Viceroyalty of the Liang Kuang at Canton.

It is a matter of current comment that the promotion to Canton was effected solely through the power of money. When it became evident that Viceroy Yang could not survive his illness, Yuan dispatched his son to Peking with unlimited funds to intrigue for the post, but the Regent, while favorable to his promotion, held the opinion that he lacked executive experience to administer the Metropolitan Province, and on the other hand he desired to place a Manchu

H. E. HSU CHIH CHANG

FORMER VICEROY OF MANCHURIA NOW PRESIDENT OF BOARD OF COMMUNICATIONS

in this important office. As the two former Viceroys of Chihli had been promoted from the Governorship of Shantung, Yuan seemed to think that this precedent would tell in his favor.

His career at Canton will be closely followed, for in this hot bed of anti-foreign sentiment and insurrection, a viceroy predisposed to mischief can have his hands full. Yuan Shu-Hsin's rapid advancement is exceptional inasmuch as he is one of a very few governors or viceroys who has not risen to his rank through the grade of treasurer. It is a singular fact that of all the present provincial rulers there are only four who have not been promoted from the rank of Treasurer, and the same rules applies to all other high officials in Peking graduated from the viceregal class.

THE LATE YANG SHIH-HSIANG

The late Viceroy of Chihli, Yang Shih-Hsiang, first came into prominence in 1901 when Yuan Shih-Kai discovered him as Taotai of Tungchow, and raised him to the post of Judge of the Province and in the following year to the Treasury. In January, 1905, through Yuan's influence, he was again promoted to the Governorship of Shantung, and on Yuan's appointment to the head of the Waiwupu in September, 1907, he caused the transfer of his protégé to the Viceregal vacancy at Tientsin. The late Viceroy could not be classed in the same category with such men as his predecessor or successor in office, and, although he carried out his work diligently and effectively, he was at the best only an instrument of Yuan Shih-Kai's.

According to plausible reports Yuan was a lavish executive, and created a large number of superfluous offices and sinecures for the benefit of his henchmen, and their retention in service was made obligatory on Yang's appointment as Viceroy. In addition to taking care of the numerous friends of Yuan in the Chihli service, his own relations and favorites had to be accommodated and further sinecures created. The average Tientsin official drew salary from the Provincial Treasury for several different jobs.

It is further alleged that Yuan left a deficit of Taels 7,000,000 which could not be officially accounted for, and one of the considerations on which Yang was given the post was that he should take over the shortage. In providing for the further increase in soft jobs for his own friends, and those foisted on him by Peking, instead of reducing this deficit, it was augmented to nearly 10,000,000 Taels on Yang's death. On Yuan's downfall, Yang seized the opportunity to dismiss many of the useless officials and effected a considerable saving.

The present acting Viceroy, Na Tung, has been conducting an investigation into the

H. E. TSEN CH'UN-HSUAN

EX PRESIDENT OF BOARD OF COMMUNICATIONS, VICEROY OF YUN-KUEI LIANG, ETC. AWAITING APPOINTMENT

Provincial accounts, and while the misappropriation of a large sum is admitted, it is far below the amount originally claimed. Yang's treatment of his patron and benefactor, when Yuan turned to him for support on his downfall, has given rise to much unfavorable criticism. Chinese officials and certain inspired organs insist that Yuan's visit to Tientsin immediately following his dismissal was on purely personal business, but there is good reason to believe that he fled to his protégé for material support and assistance. It is a fact that Yang refused to see or admit him to the Yamen, and the few Tientsin officials aware of the secret visit also ran to cover, afraid to communicate with him. His last hope vanished, Yuan fearing for his life, hastily entered the British Settlement and passed the night in the Astor House, and only returned to Peking on the guarantee of personal safety. Yang's treatment of the man who made him was resented by many of the other high officials in Chihli, who, it is claimed, would have rallied to Yuan's support had Yang shown a little backbone, and it is already

H. E. Li Ching-Fang (adopted son of Li Hung-Chang), minister to great britain. H. E. Sheng Kung Pao, H. E. Tsen Ch'un-hsuan, H. E. Lu Hai-huan.

rumoured that Yang's demise was assisted by some of Yuan's adherents, in the desire for revenge. This is probably only another of the many stories which find currency in a country where actual facts are difficult to secure.

In his valedictory memorial to the Throne the late Viceroy advocated the re-organization of the Navy, the reform of official administration, retrenchment of expenses and encouragement of industries as essentials in preparing for a constitution in China. He also dilated on the importance of real action in reform measures and expressed sorrow that paralysis should prevent him from reaching the goal of his desire, which was to carry out reform in the government.

H. E. Sheng Hsuan-Huai, vice president of board of communications, etc.

H. E. CHEN KUEI-LUNG,

Viceroy of the Hu-Kuang.

The present occupant of the Viceregal Chair vacated by the "Grand Old Man of China," Chang Chih-Tung, has a comparatively short official career in high offices. A native of Kueichou Province, he passed the Metropolitan examinations in 1886. During the strenuous year of the Boxer troubles he was Vice-Governor of Peking and later Governor. In May, 1901, he was promoted as Treasurer of Honan, and in December Director General of Grain Transport. In April, 1903, he was made Governor of Honan, and transferred to Kiangsu in February, 1906, and to his present post as Viceroy in March, 1908.

H. E. Lu Hai-Huan, director general, tientsin-pukow railway. former president of the board of army and waiwupu.

H. E. SHENG YUN

The recent dismissal of the viceroy of the Shen-Kan, H. E. Sheng Yun, is a striking instance of the determination of the Regent to carry out his policy in the face of stubborn opposition. The career of Sheng Yun in various posts in the border provinces made him one of the most valuable officials of the Empire. A Mongol by birth, his official career started as Grain Taotai of Shensi in 1899, Judge of Shansi in May, 1900, Treasurer of Kansu, September, 1900, and in April, 1901, Governor of the Province. During this period he met the late Empress Dowager and the Court during their sojourn at Si-anfu, the capital of Shansi. It is not improbable that he listened to, and remembered her rather

FOUR GREAT VICEROYS OF THE LAST GENERATION

THE GREAT LI HUNG-CHANG.

LIU KUAN-IH,

ONE OF CHINA'S GREAT VICEROYS OF THE LAST GENERATION, GENERAL OF THE CHINESE FORCES IN THE WAR WITH JAPAN, ETC.

LI SHING YUAN.

WANG WENG SHAO.

pointed remarks about foreigners and reform, which under the circumstances in 1900 were somewhat caustic and explosive. After his elevation to the viceregal seat at Lanchowfu, came the decree promulgating the constitution and preparations for its establishment. Sheng never believed in it, and, up to the death of the late Empress, was not required to bestir himself in the matter. But with the accession of Pu-yi to the throne and his father to the Regency, the edict again went forth commanding the Viceroys to start the wheels turning. Sheng still winked the other eye and wrote back that it was impracticable for Kansu and the Mongol borderland, and stated that the late Empress was only bluffing about the Constitution anyway to pull the wool over the eyes of foreigners, and she never really intended that it should be carried out. Sheng's mind reverted back to her sayings of 1900 and forgot that the Empire had moved, while he had vegetated on the outposts of civilization.

So, while poor old Sheng was probably right in his attitude, he was foolish enough to express his opinions too freely, and the Regent lost no time in taking his official scalp.

Mao Ching-Fan, the Provincial Treasurer, acting Viceroy of the Shen Kan, is a native of Kiangsu, and in 1903 was in charge of the Kiangnan Arsenal. After filling various offices he was made Commissioner of Education of Kiangsu in May, 1907, and promoted to the Treasury of Kansu in 1908.

H. E. LI CHING-HSI.

VICEROY OF THE YUN-KUEI PROVINCES.

The appointment of Li Ching-hsi to the viceregal office of Yunnan, on the transfer of Hsi Liang to Mukden, came as a surprise, for from all reports he is without any previous experience in provincial administration. It is safe to infer that this nomination was directly influenced by his contribution to the Imperial "pork barrel," from the millions of his uncle, the celebrated Li Hung-Chang. The enormous wealth of the late statesman, distributed to his sons and adopted sons, have secured for them preferred posts in China, and in the case of H. E. Li Ching fang—the present Minister to Great Britain—the use of money seems to have been well directed.

The task of the new Yunkuei Viceroy is not an easy one, for the province is the scene of frequent rebellion, and the international disputes with France on the Southern borders will keep him fully occupied and will tax his ability to the utmost.

THE GROUP OF AMERICAN EDUCATED OFFICIALS ELEVATED BY YUAN SHI-KAI TO HIGH OFFICIAL POSTS

H. E. LIANG TUN-YEN,
JUNIOR PRESIDENT OF THE BOARD OF FOREIGN AFFAIRS

H. E. TANG SHAO-YI,
RECENTLY RETURNED FROM MISSION OF THANKS TO AMERICA AND STUDY OF FOREIGN FINANCIAL SYSTEMS. AWAITING APPOINTMENT AS VICE-PRESIDENT OF A BOARD

H. E. TSAI SHAO-CHI,
CUSTOMS TAOTAI OF TIENTSIN, THE PLUM OF THE SERVICE

H. E. LIANG TUN-YEN

The Junior President of the Board of Foreign Affairs, the working Secretary for State for China, is a Yale Graduate of 1883. Although the venerable Prince of Ching and Na Tung hold the first and second presidencies of this Board, on the Junior head, owing to his foreign education, falls the heavy routine work. Like the rest of the Educational Mission to America of 1874, Liang Tun-Yen is a Cantonese, and is the only one of the many returned graduates who has risen to the high rank of President of a Board. Liang's official career was, for a number of years, confined to the Viceregal Yamen at Wuchang, as Secretary and Interpreter to Chang Chih-tung, and to this intimacy is due his advancement and elevation. In 1903 the Viceroy secured for him the post of Customs Taotai of Hankow, and, in October of 1904 he was transferred to the same post at Tientsin. In May, 1907, he was appointed Minister to America, to succeed Sir Liang Cheng. The order was subsequently rescinded and he was sent to the Board of Foreign Affairs as Vice-President. In his career he was fortunate to have been associated with the two most powerful officials of the Empire, Chang Chih-tung and Yuan Shih-Kai. Chang made him, and Yuan developed and brought out his abilities. As Vice-President of the Waiwupu, he owed his post to Yuan. Although others of the foreign educated Cantonese had been longer with Yuan and held his confidence to a greater degree, and who undoubtedly were fully suited for this position, yet there were certain traits and attainments added to the possession of great tact, in the make up of Liang Tun-yen which fitted him for this particular and difficult post. He has fully justified the confidence reposed in his selection. Last year he was appointed in company with Prince Yu Lang as Imperial Commissioner to welcome the American fleet at Amoy, and at the time of the Imperial deaths was on a vacation of one month to visit his old home in Canton.

HIS EXCELLENCY CHOW CHANG-LING (C. L. CHOW)
CUSTOMS TAOTAI AT NEWCHWANG

HIS EXCELLENCY CHUNG MUN YEW
MANAGING DIRECTOR OF THE CHINA MERCHANTS STEAM NAVIGATION COMPANY AT SHANGHAI AND OF THE SHANGHAI-NANKING RAILWAY, A GRADUATE OF YALE UNIVERSITY AND FORMER SECRETARY OF LEGATION AT WASHINGTON AND CONSUL GENERAL AT HAVANA AND MANILA.

HIS EXC. LIANG JU-HAO.
RECENTLY RETIRED FROM CHIEF SECRETARY OF MANCHURIAN GOVERNMENT, DECORATED BY EMPEROR OF JAPAN.

Urgent orders to return to his official duties hurried him back to the capital. On the downfall of his patron, Yuan Shih-Kai, it was expected that Liang would have to quit also, but the influence of his old friend Chang Chih-tung, then supreme, insured his retention. The action of the Regent in retaining the services of Liang Tun-Yen, and promoting him to the post left vacant by Yuan, as President of the Board, has largely contributed towards dispelling the uneasy feeling created by the precipitate dismissal of Yuan Shih-Kai. For Liang is highly esteemed and respected by all foreigners for his uniform politeness and readiness to oblige. Not that he is pro-foreign or enthusiastic about reform, or that he can be readily manipulated into indorsing the many foreign schemes or propositions. He is what be termed a conservative liberal, and is dubious about the future success of the present constitutional movement. However, he is quietly handling China's interests in the many intricate and difficult problems now on the tapis and is able to achieve his point without incurring the enmity of the other side.

H. E. LIANG JU-HAO

One of the 120 students who proceeded to America in 1874 with the Educational Mission of Yang Wing, was the young Cantonese Liang Ju-Hao, more familiarly known under his other name of Liang Min-Ting (M. T. Liang). After completing a course in the colleges of Hartford and Springfield, he returned, without graduating, to China in 1881. Entering into commercial life he was employed in a lawyer's office in Hongkong and afterwards in a mining company. Like Chow Chang-ling, Tang Shao-yi, and Tsai Shao-Chi, schoolmates of his in America, his start in official life dated from the time when they were employed by Yuan Shih-Kai in the Residency at Corea, where a close intimacy sprang up with the future powerful ruler of China. As mentioned in the sketch of Tang Shao-yi, Yuan's views were greatly broadened by contact with the brainy young American educated Cantonese, and his mind prepared under their influence for the progressive attitude

assumed when he came into power. How far this contact with his assistants affected Yuan's administration of Corea and reports which precipitated the war with Japan can only be surmised, for there is now no doubt that Yuan's actions contributed to bring about the hostilities. While Yuan was directly obeying the orders of Li-hung-chang, his own interpretation of these instructions materially influenced the situation.

The friendship contracted with Yuan in Korea resulted in Liang's selection as one of his confidential assistants and here Yuan demonstrated that intuition, so rarely met with in administrators, of choosing men who can achieve results. On the restoration of the Imperial Railways of North China after the Boxer troubles, Liang was employed in the traffic department and in 1902 was appointed Director of the Road. Liang's ability, however, could not prevent the unprecedented amount of corruption which it is claimed characterized his tenure of office. Yuan was Viceroy at the time and trusted his lieutenant implicitly, and in 1906 secured for him the post of Customs Taotai of Newchwang. In April of the following year he was given the plum of the service,—Customs Taotai of Tientsin—and in October the prize at Shanghai. His education and ability to deal with foreigners was expected to bridge over the difficulties existing in the settlement, culminating from the actions of Taotai Yuan, and so well did he fulfil his mission that his patron transferred him as one of the Secretaries of the Board of Foreign Affairs at Peking. Here, under the wing of Yuan Shih-Kai, a brilliant opportunity was presented for the exercise of his undoubted diplomatic abilities, but the departure of Tang Shao-yi for America, leaving the important post at Mukden vacant, led to his transfer as Chief Secretary to the Manchurian Government pending the return of Governor Tang. His tenure of office in Mukden was cut short by the downfall of his patron and the appointment of Hsi Liang as Viceroy. The new Viceroy has no use for foreign educated officials who know more than himself, and one of the first to go was the Secretary, M. T. Liang. Since then he has been decorated by the Emperor of Japan for the equitable spirit displayed in handling the many delicate and intricate political questions which had to be threshed out in the Mukden Yamen. Liang is now on leave visiting Japan for his health. His further employment and advancement under the new régime seems certain, so he is one of the few men whom China cannot afford to dispense with during the next critical decade.

H. E. TSAI SHAO-CHI

Tsai Shao-chi is another of the group of American educated Cantonese, in whom Yuan Shih-kai reposed implicit trust and confidence. Tsai was a Yale Student of the Mission of 1874, graduating in 1885, and became attached to Yuan in the days of the Corean residency. For many years he held minor posts, and was later connected with the Imperial Railways. His first important official appointment was the Customs at Newchwang in May 1907, and in October of the same year he was promoted to Customs Taotai of Tientsin, which he still occupies. Under the present shifting around he will probably be transferred to make way for some favorite of the new viceroy.

Tsai's post has been an arduous one, for, in addition to the heavy work attached to his office, he was the real buffer between the Viceroy and the foreigners. The foreign affairs of Chihli were entrusted to his charge, and in a way he was also the go-between for those higher up at Peking.

Tsai is very American in his manners and ideas, and is educating his sons in that country. The post of Minister to America was offered him two years ago, but he declined the honor to round out his official life at home.

HIS EXCELLENCY TANG SHAO-YI

Probably the most interesting high official in China is His Excellency Tang Shao-Yi, a Cantonese by birth, who was sent to America in the early eighties to be educated. Graduating from Columbia College in New York city, the young student returned to his native land, with well defined ideas of the outside world and the principles underlying modern progress, and thoroughly equipped for the rather eventful official experience in store for him. Amongst many bright youths of his own province who were also educated abroad at the same time, and who have since made international reputations in the official life of China, the name of Tang Shao-Yi stands easily at the head of the list, and it is not too much to add, that if he was given his due by his enemies he would be acknowledged as the brainiest man in the Empire to-day.

His official life commenced when Yuan Shih Kai was ordered to Corea as China's Resident previous to the war with Japan, Tang going with him as Secretary. From this point the future of the young student was assured, for in Corea there sprung up an intimacy and friendship with his superior resulting in the rapid advancement of both to the highest posts in the Empire. Whatever debt China and the world owes to Yuan Shih-Kai for the progress of the Empire during the last ten years while he controlled the government, some share of it must be credited to the man whose influence was largely responsible for Yuan's liberal views. For it is quite evident that Yuan, who had never been abroad, and whose education was not up to the standard of other celebrated statesmen of China, must have received his inspiration from his confidant and intimate friend, Tang Shao-Yi. As Yuan was advanced by the favor of the late Empress Dowager to the highest offices of the Empire, he elevated his friend accordingly. After an experience in the Railway Administration of North China, and as soon as Yuan was made Governor of Shantung, he had Tang by his side as adviser. On Yuan's promotion in 1901 to the Viceroyalty of Chihli, his protégé was appointed as Customs Taotai of Tientsin, the choicest plum in the service below the grade of Governor. Following a special mission to Tibet in 1904, he was selected to negotiate the Tibet Convention at Calcutta with the Indian Government. This experience brought him a promotion as Vice-President of the Board of Foreign Affairs in 1905, and in the following year he was appointed Director General of the Shanghai-Nanking and Lu-han Railways, and afterwards returned to his former position.

On the reorganization of Manchuria into a viceroyalty Tang Shao-Yi was made first Governor of Mukden, under Viceroy Hsu Shih Chang.

It is safe to say that much of the progress and reform initiated under Viceroy Hsu was due to the influence and guiding hand of the more enlightened and experienced governor. In the short time he officiated at Mukden, Tang's efforts were mainly directed along lines calculated to check Japanese development of the province and correct the many infringements of China's rights and authority. In the matter of the Fakumen railway extension, it would appear that he went too far in his policy to outwit and disconcert Japan, and although the solution of the issue is still pending, China has failed in the attempt to create discord between Britain and her ally. Tang is a great believer in publicity, and while at Mukden was instrumental in getting China's side of the situation in Manchuria before the world, creating a revulsion of feeling against Japan that will take a long time to explain away.

When the late Empress decided to send a special Ambassador to America to return thanks for the remission of the Boxer indemnity, Yuan Shih-Kai had his favorite appointed to this important mission. There is reason to believe that Tang had also been doing some clever diplomatic work on his own initiative in Mukden, and the departure of the American Consul, Mr. Straight, to Washington coincided with Tang's selection for the special mission. To save Manchuria to China, American or other interests were to be invited to enter the field, and so play off one power against the other.

Many questions of vital importance to China were on the tapis last year, and in the light of recent information it seems credible that the Embassy to America had for its purpose something of much greater import than an expression of gratitude for the return of the indemnity. The *New York Herald* had been advocating an alliance between America and China, and while serious Americans realized the impossibility of such an entanglement as opposed to all their traditions, many were found who argued in its favor. If Yuan Shih-Kai was misled by these arguments on behalf of the alliance, as reflecting the opinion of the American government, and deluded by the hope that it might be secretly negotiated, in which, according to reports from Peking, he was supported by Minister Wu Ting-Fang, he cannot be censured for instructing his protégé to sound the American government on the matter. Everything seemed favorable to the success of such a mission. For some time past, certain American publicists had advocated raising the American Legation at Peking to an Embassy, thus materially affecting China's status in her foreign relations; the assured election of Taft whose ideas on the Far East had been made clear in his speech at Shanghai in no uncertain manner; the return of the indemnity, and the visit of the American Battleship Fleet to Amoy, all seemed to indicate that America would receive in a friendly spirit a proposal having for its object the closer relations of the two countries through the medium of an alliance. It is asserted, in Peking, that the matter had reached the stage where Yuan Shih-Kai had taken the responsibility on his own shoulders to officially inform the American Minister that China would agree to the change in diplomatic representation which would have overturned all the traditions of the Empire. It is also reported that this action greatly angered the Regent when he learned of it, as the change would have given the Ambassador the right of personal audience, and meeting him on equal terms. Among the many reasons given for Yuan's precipitate dismissal his assumption of authority in this matter was the "last straw" which influenced the Regent's summary edict of retirement.

However, it is now accepted that Tang Shao-Yi's mission had some greater significance than the return of thanks, and it is clear that whatever it was, it has failed.

After leaving America, the mission travelled through Europe making a study of financial systems. During its absence the Imperial deaths and the dismissal of Yuan took place. Tang Shao-Yi has returned to Peking and submitted his memorial on financial reform. Native reports state that he was very cooly received by the Regent, and instead of a well merited promotion, he has been placed on "waiting orders" as an Expectant Vice-President of a Board, corresponding to an Assistant Secretary of Department in America. Bereft of the powerful influence of his old friend and patron, and exposed to the enmity of the old conservative Manchu clique, now in power at Peking, the future of the brilliant Cantonese diplomat is difficult to forecast. The shortage of skilled men at the head of affairs in China, however, leads to the hope that the ability of Tang Shao-Yi will again be recognized by the Regent and an appointment to some high post tendered him.

(3) An importer desirous of paying the Customs duties on a consignment and deferring the payment of the Internal Revenue taxes may pay the Customs duties, whereupon the consignment will be transferred by the Customs authorities to the Internal Revenue bonded warehouse, from which it may be removed upon payment of the Internal Revenue taxes as provided above.

(4) Upon removal of taxable articles from the Custom house or Internal Revenue bonded warehouse for delivery to the importer, each package shall be marked with the schedule, paragraph, assessment, and invoice numbers of the invoice upon which the tax was paid, and shall likewise bear its serial number.

Upon being released from Customs or Internal Revenue custody, taxable articles shall be taken up in the wholesale dealer's official register book, B 6-8 or B 9, and the schedule, paragraph, assessment, and invoice numbers of the invoice upon which the tax was paid, together with the serial numbers of the packages, noted therein.

THE PARACALE EXTENSION GOLD DREDGING CO.

The above company has been formed under the laws of the Philippine Islands with a capital of ₱450,000 divided into 45,000 shares at ₱10 each. 17,500 shares were exchanged for the property comprising two claims of placer ground situated between the property of Paracale Gold Dredging Company and that of the Stanley-Paracale Gold Dredging Company now being operated to great advantage. It is the purpose of the company to sell 15,000 shares at par for the purchase of two dredges, and it is expected that one of them will be operating by the end of eight months. The directors of the company are: Mr. Joseph Pearson, M. A. Clarke, Nels Peterson, Fred C. Fisher and J. V. Lafferty. Mr. Pearson is one of the pioneer gold dredging men in the islands and represents New Zealand capital that has been so liberally and successfully invested in the Paracale district. The other gentlemen are well-known Manila business men whose names have ever been associated with successful enterprise.

THE MADISON GOLD MINING COMPANY

This company owns nine claims in the now famous Antimok District in Benguet located southeast of the Bua Mining Company's property. The development work accomplished comprises cross cuts on the principal vein by tunnels running northeast. This vein is of manganese and calcite, runs through six of the group of claims a distance of 6,000 feet. Upper tunnel No. 1 is 70 feet in length and encounters the vein 40 feet from the mouth of the tunnel. Then it follows it for 27 feet. Ore values in the center of the vein average $15.50 per ton. Lower tunnel No. 2 opens 170 feet southeast of lower tunnel No. 1 and cuts the same body of ore assaying at a point where the ore is 12 feet in width about $9.86. Assays from another vein tapped by a tunnel 75 feet in length where the lead is of pure calcite and four feet in width averages from $29.84 to $52.50.

A company has been formed with a capital of ₱600,000, of which one-half has been exchanged for the property in its present stage of development. These shares have a par value of ₱1.00 a share. The directors of the company are: Dr. J. R. McDill, John W. Haussermann, H. P. Whitmarsh, C. J. Bayer, and Charles C. Cohn. Development funds have been realized by the contribution made by the present shareholders of 25,000 shares to be sold at 40 centavos and this sum will be utilized for further development work during the year. At the present time there are 10,000 tons of $8 ore blocked out. There is plenty of water for power for a twenty stamp mill and timbering is plentiful in that vicinity. After the sale of the contributed stock at 40 centavos, further sales of stock from the treasury will be at par.

This property is located in what is known as the producing section of Antimok and there is every indication, that the company's efforts to develop the deposits there will be crowned with success.

FAR EASTERN RAILWAY NEWS

SHANGHAI-NANKING RAILWAY.—The budget for the six months ending December 31st, 1909, estimates the gross earnings for the term at Tls. 846,000; working expenses, Tls. 616,000, which makes the estimated net earnings Tls. 230,000. The estimated working expenses is thus placed at about 73% of the gross earnings of which 43% is chargeable to the Chinese department. These estimates are very conservative. It is expected that the passenger earnings will exceed Tls. 7,500 per mile open which is considered very satisfactory and compares favorably with the Imperial lines. The freight receipts have been disappointing during the year, but are slowly increasing and the removal or reduction of the likin should initiate a great improvement. The following is a comparative table covering the three preceding half-year terms and the estimate for the latter half of 1909:

	Ended June 30th, 1908.	Ended Dec. 31st, 1908.	Ended June 30th, 1909.	Estimated June 30th, 1900.
	Tls.	Tls.	Tls.	Tls.
Gross Earnings. . .	823,000	786,815	880,000	846,000
Working Expenses.	518,000	574,261	602,000	616,000
Net Earnings . . .	305,000	212,000	278,000	230,000

Increased mileage and elimination of charges against capital are responsible for the increased expense noted in the estimates. The reduction of the expenditure in the maintenance of the Chinese department is considered feasible without injury to the efficiency and indeed it is believed would greatly expedite the conduct of the different departments of the railway should many of its ramifications be restricted or eliminated.

SOUTH MANCHURIAN RAILWAY HOSPITAL.—The large extension to this institution at Dairen was expected ready for occupancy by the end of this month. It will be thoroughly equipped with the most modern conveniences, and a large and competent staff chosen from the most experienced medical men in the empire will be in charge.

BRITISH NORTH BORNEO RAILWAYS.—The receipts from all sources of traffic for May amounted to $7,106.95 and the expenditure $13,068.64. The large increase in expenditure was due to debit notes for material, etc., charges that should have gone to the debit of capital account. The entire length of railways in British North Borneo is about 120 miles and includes the 90 mile line connecting Tenom and Jesselton; 20 miles on the Weston-Beaufort section and the balance of distance in small branches to these lines. Surveys have been made from Tenom to Tawao and a branch up the Sook Valley has been practically decided on. Chas. F. Ashton-Pryke Esq. has been acting General Manager of Railways during the absence of General Manager W. J. Conn who was recently elected a member of the Royal Society of Arts and is one of the most widely known British railway engineers.

KOREAN RAILWAYS.—The program for railway construction in Korea under the resident general is covered by estimates which will reach approximately the sum of Yen 40,000,000. This includes the building of the Phyon-nam Railway at a cost of about yen 2,000,000; the Seoul-Gesan Railway at a cost of about yen 20,000,000 and the Ho-nam line which is believed will cost yen 18,000,000 to complete. Nothing will be done this year to improve and extend the Seoul-Wiju line and as soon as the estimates are approved by the Diet, construction work will begin on the three lines referred to.

FEDERATED MALAY STATES RAILWAYS.—The report for the year 1908 shows an increase of mileage of 39 miles by the taking over of Sungei Ujong Railway and the opening of the Ipoh-Tronoh branch, making in all, including sidings, 543 miles in operation under the control of the government. The total investment including $3,460,000 approximately expended during the year amounts to about $45,500,000. The capital outlay, including that on lines under construction and the Johore Railway loan with surveys, etc., amounts to about 13,000,000 dollars. The gross earnings amounted to over $5,000,000, a decrease of $225,000 approximately compared with the results of the previous year. The expenditure amounted to about $3,450,000 leaving a net profit of $1,588,390 or an actual return of 3.49% on capital. There was decrease generally in traffic receipts, there being approximately 6,400,000 passengers, 600,000 tons of freight and 72,400 head of live stock. Seventeen new stations were opened including 14 telegraph stations; 244 locomotives and 244 freight cars were added to the rolling stock during the year.

The death of General Manager C. E. Spooner recently is deeply regretted and is a severe loss to the Government. He had been identified with the great strides made in welding the different states together by one of the most important systems of railways in the Far East. He was a characteristic pioneer and his memory will be cherished by his countrymen in the states more and more as the benefits of his life work are realized in the rapid development of this important area. D. J. Highet Esq. has been in charge as acting manager.

THE JOHORE STATE RAILWAY.—This railway which represents four years' work and which connects Johore Bharu and Kuala Lumpur, a distance of 121 miles 48 chains, was formally opened on July 1st and trains were run over the line from each terminal. Construction was carried on from both ends simultaneously through difficult jungle with but little exception. One point about two miles in length ran through a marsh and over 200,000 cubic yards of earth were dumped in here to make the embankment permanent. There are 19 bridges of 100 foot span, one bridge of five spans of 100 feet each, one 200 foot bridge and one three-span bridge of 100 feet each. The sleepers used were of Australian jarra and Johore chengai. The carriages for the line were built of chengai at the F. M. S. Railway shops. The country traversed is quite level, the highest point being about 230 feet above sea level. The deepest cut did not exceed 40 feet and the maximum embankment was about 35 feet in height. The opening of this line completes railway communication between Singapore and Johore. The ferry at the straits is not yet complete, but a steamer belonging to the Kranji Railway was used to cross without inconvenience.

INDIAN RAILWAYS.—From 20 miles of railway completed in 1853 the Indian system according to the latest report comprises over 30,576 miles of line covering British India almost like a net work. The capital liability of the state railways alone represent £309,123,355. There are 525,583 persons employed of which 7,344 are Europeans, 9,951 Eurasians and 508,288 Indians. The average rate for passenger fare of all classes is not over one-fifth of an English penny. Last year over 321,000,000 tickets were sold.

TIENTSIN TERMINUS.—The site of the terminal station of the Tientsin-Pukow is to be located at Chao Chin-chang.

THE MOJI-SHIMONOSEKI-MOJI RAILWAY FERRY The work of constructing the embankments on either side of the strait is progressing rapidly extending on the Moji side as far as Dairi and on the other side as far as Takesaki. It is expected that this part of the work will be completed late this fall. The service when completed according to present plans includes a fleet of about 800 ferry boats divided into three separate lines and each ferry having a capacity of about 30 cars.

AUSTRALIAN RAILWAY DEVELOPMENT.—Cabled advices state that the survey of the route for the projected railway from Port Augusta in South Australia to Kalgoorlie on the Western Australian goldfields, 1,070 miles in length, has been completed. The report of the survey parties is favourable. No serious engineering difficulties are anticipated and the cost will be comparatively low. The proposed line will furnish trans-continental communication from east to west linking up the railways of the eastern and southern districts and considerably expediting the transport of the European mails.

PEKING-HANKOW PROFITS.—The management of the Peking-Hankow estimate that the years net profit will exceed Tls. 10,000,000 and it is understood that this sum if realized shall be utilized in redeeming the Shanghai-Ningpo Railway.

CHINESE RAILWAY SUPPLIES.—The Peking railway authorities have issued instructions that all the different Chinese companies must purchase rolling stock as they may require it from the Tangshan and Changsin Works to the extent of the shops' capacity.

BEHRING STRAIT RAILWAY AND TUNNEL.—British engineers are reported to be engaged in making a survey of the straits for the purpose of reporting on the feasibility of connecting the mainland of Siberia with Alaska by means of a tunnel under the Behring Straits. This is another phase of a much talked of project that at one time received the approval of the Czar.

CHINCHOW-TAN NAN RAILWAY.—The construction of a line between these two points and to be extended to connect with the Trans-Siberian railway has been authorized according to the *P. & T. Times*.

FORMOSAN RAILWAYS.—The Japanese government is interested in providing better means of transportation in the almost inaccessible eastern section of Formosa and a survey of a railway to connect Taito and Karenko is now under way.

PEKING-KALGAN RAILWAY.—This important line has been completed, but regular service has not yet been established beyond Suenhwa.

ANGLO-SIAMESE RAILWAY LOAN AGREEMENT.—This Agreement, made this tenth day of March, 1909, between the Government of the Federated Malay States (hereinafter called "the lender") and the Railway Department of the Kingdom of Siam (hereinafter called "the borrower.")

WITNESSETH AS FOLLOWS:

1. The lender agrees to advance to the borrower a sum of money not to exceed four million pounds (£4,000,000) sterling on the terms and for the purpose hereinafter mentioned.

2. The moneys received by the borrower under this Agreement shall be devoted to the construction, equipment, maintenance, and operation of the railways of the borrower in the Siamese dominions of the Malay Peninsula. These objects shall be held to include such matters (for example, telegraph and telephone lines, terminal wharves, etc.) as are usually incident to the construction, equipment, maintenance, and operation of railway lines.

3. The above sum shall be paid to the borrower in London in partial payments, as demanded by him from time to time; provided, however, that the demands so made may not exceed a total of seven hundred and fifty thousand pounds (£750,000) in any one year. The lender also reserves the privilege of notifying the borrower at any time that in future he will require three months' written notice of any demand for such partial payments.

4. The borrower shall pay interest at the rate of four per cent (4%) per annum on the moneys actually received by him from time to time. Interest shall run on the respective partial payments from the date they are received by the borrower. Interest shall be payable at half-yearly intervals, that is to say, on the 1st January and the 1st July in each year.

5. Payments of interest and principal shall be made in London.

6. The amortization of the loan will be effected within a period of forty years by yearly annuities according to the Table attached to this agreement. The first redemption will take place within fifteen years fom the date of this agreement.

At any time after the expiration of ten years from the present date, the borrower shall have the right to redeem at par all or any part of the principal remaining unpaid. In case, however, the borrower intends to anticipate redemption by larger payments than those provided for by the Table of Amortization, he shall give three months' notice to the lender.

7. For the repayment of the principal and interest due under this agreement, the borrower pledges as security the sections of railway, above referred to, as those sections are successively constructed. If, therefore, at any time the borrower fail to pay any sum, whether of principal or interest, due by him under this agreement, and if such default continue for a period of not less than six months, the lender shall be at liberty to enter into possession of the sections of the railway then completed under this agreement, and to work the same until the default has been made good. The net profits obtained by the lender from any such working shall be set off against the indebtedness of the borrower.

8. Since the proceeds of this loan are to be used for the specific purpose mentioned in Section 2 hereof, it is agreed that, until the completion of the construction of the lines to be built under this agreement, the construction, equipment, maintenance and operation of those lines shall be kept distinct from that of the other railways of the borrower.

9. The borrower shall keep such books and accounts as shall be necessary to show the amount expended by him from time to time out of the sums received by him from the lender under this agreement. These books and accounts shall be open to inspection by the lender at all reasonable times so that he may satisfy himself that the moneys advanced by him have been applied to the purposes for which they were lent.

The Railway Department of the Federated Malay States shall be at liberty to inspect the plans, showing the route along which the railway is proposed to be constructed, the sections, specifications, and estimates of the cost of the railway, and the number and locality of its sidings, stations, level crossings, goods sheds, signal stations, and other works from time to time, as the survey and preparation of working drawings proceeds.

In witness whereof the parties hereto, acting by their duly authorised representatives, have hereunto set their hands on the day first abovementioned, at Bangkok.

OBITUARY

Mr. Charles G. Warnford Lock, the well-known mining authority, author, and expert passed out at Bandarawella, Ceylon, on July, 30th, from heart failure. Of his career, the *Singapore Free Press* says:

Mr. Lock first came to the Straits in June 1902, to become manager of Raub Gold Mine, a position which he held for about four years, leaving the company in 1906. Thereafter he was in the Peninsula as a mining engineer and expert, and we believe reported on Sempam Mine, among others. He stayed in Singapore for some time, and his wife came out here in April, 1907. His age must have been close on sixty.

Mr. Warnford Lock's qualifications were F. G. S., M. I. M. M., and he had been engaged, professionally, in Iceland, Austria, British Columbia, and New South Wales. He was a great writer and some of his books are "The Home of the Eddas," "Practical Gold Mining," "Gold Milling," "The Miners' Pocket Book" and "Mining in the Malay Peninsula," the last named being issued only a few years ago.

CONTRACTING NEWS

BANGKOK STEEL MARKET.—For the supply of materials and construction tenders submitted separately for corrugated iron roofing, asbestos tile roofing and cement tile roofing respectively and included in bid for contract complete as follows: Bangkok Dock, Ticals 39,000, 47,200, 46,000; Howarth Erskine, 40,830 55,745, 54,120; J. M. Dunlop, one bid corrugated iron roof, 44,500; G. Kluzer & Co., corrugated iron, 35,700; asbestos tiles, 40,300. The bids were opened July 3rd but no award was made.

SHANGHAI CEMENT CONTRACT.—The following tenders were accepted by the municipality of Shanghai for the supply of cement for the year:

Shewan, Tomes & Co. "Green Island." 350 casks per mensem at Tls. 3.50 per cask.

Ilbert & Co. "Dragon." 100 casks per mensem at Tls. 3.20 per cask.

East Asiatic Co., Ltd. "Buffalo." 100 casks per mensem at Tls. 3.44 per cask.

The remaining tenders are as follows:—

Dodwell & Co., Ltd., "Unicorn", Tls 3.45 per cask.

Chee Hsin Cement Co., Ltd., Tls. 3.45 per cask.

Takata & Co., "Aichi", Tls 4.59 per cask.

CHIEF QUARTERMATERS.—Six Steam Launches —Contract awarded Hongkong and Whampoa Dock Company.

CHIEF QUARTERMASTER.—Light Twin Screw River Steamer.—Contract awarded the Hongkong and Whampoa Dock Co., Ltd.

SANITATION SYSTEM, BILIBID PRISON, MANILA. American Hardware and Plumbing Company: Section A, ₱15,972.44; Section B, ₱5,974.62; Section C, ₱1,406.31; Lambert-Springer: Section A, alternate proposals, ₱9,997.70 and ₱12,666.72; Section B, ₱1,440.00; Section C, ₱495.00. No award has been made.

ELECTRICAL SUPPLIES, MUNICIPALITY SHANGHAI.—Tenders are invited for the following:

A.—The supply and delivery at the Electricity Works, c.i.f., duty paid, of 9,700 Carbon Filament Incandescent Lamps.

B.—The supply and delivery at the Electricity Works, c.i.f., duty paid, of 23,250 Metallic Filament Lamps.

C.—The supply, delivery and erection at the Electricity Works, c.i.f., duty paid, of an Electric Goods Lift, capable of raising and lowering a load of 2½ tons.

Conditions, specifications, forms of tender and all necessary information may be obtained upon application to the Electrical Engineer, Mr. T. H. U. Aldridge, at the Works, 31 Fearon Road.

A charge of Tls. 25 will be made for each specification, which will be returned upon the receipt of a *bona fide* tender.

Sealed tenders will be received by the undersigned as follows:—

A.—marked "Tender for Carbon Lamps" not later than noon on Thursday, September 30, 1909.

B.—marked "Tender for Metallic Lamps," not later than noon on Thursday, September 30, 1909.

C.—marked "Tender for Electric Lift," not later than noon on Monday, August 9, 1909.

The Council does not bind itself to accept the lowest or any tender, or to pay any expenses which the contractor may incur in tendering.

The names of tenderers, with the prices quoted, will be published for general information.—By order, W. E. LEVESON, *Secretary*.

BALLAST.—CANTON KOWLOON RAILWAY.—Tenders are invited for the supply at Lofu (Sam Chun) of 3,200 fongs (100 English c. ft. each fong) of RUBBLE STONE and of 3,200 fongs of BROKEN STONE under the following conditions and specification:—

Quality of Stone.—To be be hard and clean. Sample to be submitted with tender. No stone will be paid for not strictly to sample.

China, Manchuria, Japan, Indo-China, Siam, Straits Settlements, Malay States, Burma, India, Malaysia, and the Philippines

THE FAR EASTERN REVIEW

VOL. VI: No. 4. MANILA, SHANGHAI AND YOKOHAMA, SEPTEMBER, 1909. 25 cents U. S. Currency 50 " Philippine Cy.

THE IMPERIAL NAVY OF CHINA

His Excellency Admiral SA CHEN-PING (C. P. SAH)

HEAD OF THE NEWLY CREATED ADMIRALTY BOARD

The difficult task of reorganizing the Imperial Chinese Navy will fall on his shoulders. His past experience and undoubted ability fully qualify him for the work, and the appointment reflects great credit on the Regent's Judgment.

(From a photograph taken at Amoy, November, 1908, on the occasion of the American Battleships' visit to that port.)

Thus the new American minister to Peking is a high type of American who stands for the best in American institutions. He goes to Peking untrammeled and has no object but to serve his country faithfully and advance her interests.

The choice of the REVIEW for this post to succeed Minister Rockhill was Mr. Charles Denby, formerly Consul General at Shanghai, as we believe such a promotion would have met with general approval of all interests in the Far East and at the same time made for reward of long and faithful service. President Taft, however, decided on a different course, and while Mr. Denby did not receive the recognition we believe he deserved, Mr. Crane may rest assured he will be loyally supported by all who have the best interests of America in the Far East at heart.

CHINESE RAILWAY LOANS AND AGREEMENTS

For a time the European and American press devoted much space to a discussion of the Hankow-Szechuan railway loan and, particularly, the participation of a group of American capitalists. Then we were entertained with much comment on the differences between Japan and China over the reconstruction of the Antung-Mukden Railway. Now it would appear that everything has been arranged to the satisfaction of all parties interested. The Hankow-Szechuan loan has been increased to £6,000,000 and the British, American, French and German groups participate for equal portions. The agreement between China and Japan in regard to the reconstruction of the Antung-Mukden railway has been signed and all diplomatic difficulties between the two countries amicably arranged.

Commenting on the result of the negotiations in regard to the Hankow-Szechuan Railway Loan, the *London and China Express* says:

"That the dispute has been settled is satisfactory. No one contested the right of United States financiers to participate in the Hankow-Szechuan Line. What did not present itself as wholly acceptable was the method and time adopted to enforce the claim, after having allowed it to remain apparently dead for so long. It was thought, and not unnaturally, that the arrangements which had been come to with the Chinese Government should be allowed to stand, and that American participation, which would be welcome from political and financial standpoints, should take its share in any future operations. This view was felt all the more when it became so decidedly apparent that the financial group had been stirred up into action by President Taft and the Secretary of State. Little official news has come through from Peking, but it was understood generally that the definite settlement of the loan question after the many vicissitudes it has experienced in the last six months might be reached on the lines that the American group received a one-fourth participation. It is doubtless this principle of participation which has been decided in Peking whither negotiations were transferred after the inconclusive conferences of the financial groups in London, Paris, and Berlin. The remaining matters, such as the time and form of issue, will be considered in Europe by the financial groups interested, namely, the British and Chinese Corporation, the Hongkong and Shanghai Bank, Messrs. J. P. Morgan and Sons, the Banque de l'Indo-Chine, and the Deutsch-Asiatische Bank. Anyway, the principle has been settled and the preliminary agreement has been signed with the Chinese Government. Details will now have to be concluded. The rate of interest remains at 5 per cent., and it is believed the price of the loan to China will be the same as when the loan for £5,500,000 signed before, by the three European groups, was negotiated. These details will naturally take some little time, and no period can yet be stated for the issue of the loan, but it will probably make its appearance to the public in about a month's time. In America the settlement reached has been hailed as a triumph of diplomacy. The State Department looks on it as a principle gained, and not merely as a question of a comparatively small amount of money. It is considered as a notice to China as well as Europe that the United States intends to demand and obtain its full share of the industrial and commercial development of the Middle Kingdom Unfortunately its purport is missed by many American papers who seem out to bulldose those whom it thought were likely to thwart it, but who, as a matter of fact, were ready to cordially admit the principle. It was the method, as we have said, that presented elements of objection, not the main fact itself. That the co-operation of the United States in such questions was desirable, politically and financially, was admitted directly the respective sides met. A section of the American Press has gone far beyond any facts warranted by pointing to the United States as the especial friend of China against Japanese ambitions supported by British diplomacy. The campaign in force is to represent the United States as China's one true friend in the attempt to hold off Japan, while England is pictured as alarmed by the threat to her commercial supremacy in the Celestial Empire from across the Pacific. It is unnecessary to say that Americans who know China will know that such statements are very wide of facts. The larger part of the population knows, however, little of international affairs, and less still of matters in China. The amount of the present loan when divided by four does not bulk large in each part; American enthusiasm will have a chance to manifest its new ardour by its subscriptions to its portion. On broad lines, American participation is to be welcomed, for America stands for the open door in China. As a London daily remarks, it is because the United States stands firmly by this principle, and because Mr. Taft is determined to insist on its observance that Great Britain must view with satisfaction the new activity of American policy in the Far East."

The Mukden-Antung Railway dispute has been settled amicably, and it is believed that the same may be said of the policing of the territory along this railway, which is now the only possible source of difference between the two governments. According to the *Japan Mail* it would seem that China was willing to make any concession provided that her sovereign rights in regard to the Chintao were recognized, and, throughout the negotiations, Japan did not insist on extending Korean sovereignty over this section, but claimed the right to provide protection for Korean subjects. China contended that all the Koreans settled in Chientao had accepted Chinese sovereignty and nationality and were therefore to be treated as Chinese subjects. Chinese sovereignty is for the present recognized and Japan will control Koreans, that venture in future across the border, through its consulates. But Japan has won her battle for the opening of that territory to foreign trade and residence. The compromise on both sides indicates a better feeling between the two countries, and the opening of Chientao to foreign trade, while recognizing China's sovereignty, must receive general approval abroad and be credited to Japan's tact and diplomacy.

Of this the *Japan Mail* feels justified in directing attention to the fact that: "the nations will be compelled to credit Japan's sincerity in the cause of peace. Moreover, just as the Portsmouth Treaty was used by Japan as an instrument for opening Manchuria to the tradal world by providing for the establishment of 16 open marts, so also she has seized this occasion to bring Chientao within the sphere of free commerce. Her greatest enemies will be compelled to admit that she has scored a distinct success not only in the matter of diplomacy, but also in the field of international ethics. It is now to be sincerely trusted that a new era of mutual friendship and trust will dawn for the sister Empires."

THE RAVAGES OF WHITE ANT.

The white ant is the enemy of all wood construction in the Far East where it seems to thrive more lustily than in any other part of the world. Not only has it attacked buildings but the rubber plantations of Malaya have suffered from continued ravages. The report on this subject by Colonel Wyllie, the Burma rubber expert, is of special interest at this time when the prospect for rubber is so bright. The *Times of Ceylon* says:

"Col. Wyllie has just come from the F.M.S., where he has been seeing some of the oldest planted rubber in that country. He takes a very grave view of the ravages of white ants there, and was much surprised at the extent of the damage done by them. The alarming feature of this pest, according to the Colonel, is that it generally confines its attention to the matured trees. The ants work entirely from below getting into the tap root and working up the trunk. In Rangoon, where the white-ant also carries on its depredations, it works on the outside, building up mounds round the foot of the tree. There it is at once seen, and by digging them up and putting in ashes and other materials the tree is saved. In the F. M. S. it is entirely different. It is almost impossible to tell when white ants are at work on a tree until the damage is done and the tree collapses. It was a sad sight to see, in the vicinity of Taiping, magnificent trees, some as many as twenty years old, absolutely destroyed in this manner. Lieut.-Col. Wyllie did not wish to generalize by his own brief observations, but it appeared to him that, unless some effective means of eradicating the pest was discovered, the F. M. S. would always have young rubber, as a large percentage of the old trees were constantly being destroyed by *Termes Gestroi*."

From the Philippines comes information that the white ant has almost destroyed several public buildings, or so damaged them that they are placed in the dangerous column. True the permanent type of construction, in which reinforced concrete is used, is exempt from these ravages but the old Spanish buildings are seriously exposed. Similar reports are being received from the Straits Settlements and other points in the Orient and the losses due to this pest cannot be estimated since it works quietly and when the damage is discovered, it is usually beyond repair.

In many offices it has become necessary to place metal filing cases and other office furniture in order to properly preserve records, but there is every reason to believe that if proper preventative measures are taken, the white ant may be successfully combatted.

The danger to the rubber industry is apparently of a serious character, but we note that the Government of the F. M. S. has taken steps through the Agricultural Department to instruct the planters as to the best means of fighting the pest by a series of lectures on the subject.

INTERPORT CRICKET

Mr. J W. Bain, sub-editor of the *Shanghai Times*, the wellk-nown journalist and writer on athletics, is the author of an interesting review of Interport Cricket covering the period from 1866 to 1908 in Shanghai, Hongkong, and Singapore where continued interest has been shown in this most popular of British games. The volume contains a short description of each match and we are certain will be of great interest to all lovers of the sport. The author announces that the edition is limited and will appear October 1st. The price is $1 50.

PHILIPPINE LUMBER FOR LONDON

The lumbering industry in Mindanao is flourishing as is shown by the report of internal revenue collected for the fiscal year ended June 30th, 1909, on 5,649,894 board feet and valued at ₱457,584.36, easily the leading product of the Moro Province. In addition to this comes the information that the Port Banga Lumber Company has loaded a cargo of hardwood at their mill at Port Banga on the N. D. L. Steamer *Tringganu* destined for the London market. This is the first full cargo of Philippine hardwood shipped from the islands to this market. The demand is growing for these woods and it would seem that Mindanao is getting its share in reward for well directed effort and enterprise.

FAR EASTERN RAILWAY NEWS

THE ANTUNG-MUKDEN RAILWAY.—The following agreement has been reached in regard to the reconstruction of this railway according to official announcement:

1. The same gauge as that of the Peking Mukden railway shall be adopted.

2. Both Japan and China shall recognize and approve on the whole line as already surveyed and agreed to by the commissioners of both Governments, but the location of that portion of the line, from Chen-Hsangtung to Mukden, shall remain to be decided by mutual conference between the two countries.

3. From the date when the memorandum is signed, negotiations for purchase of land and for adjustment of all other details shall be instituted.

4. From that time, the day following the signing of memorandum, this is from the day after the negotiations above mentioned are instituted, the work of the reconstruction shall be accelerated.

5. China shall instruct local officials along the line to give every facility regarding the execution of the work.

The traffic on this line was interrupted last month by serious inundations.

THE PAKNAM RAILWAY COMPANY LIMITED.—The report for the half-year ended June 30th gives the information that the gross receipts were Ticals 90,900.82 and the expenses Ticals 33,519.53, leaving a profit of Ticals 57,519.53. The mileage for the term is placed by the report as 31,029 kilometers and 313,925 passengers were carried. During the 18 years' history of this company dividends to the amount of 158.03% have been paid the shareholders.

FORMOSAN RAILWAYS.—The government railways in Formosa include about 271 miles of line, the main road connecting Takow and Taihoku, a distance of 228 miles, the balance being branches from Takow to Kyukyakudo, a distance of 10 miles; from Taihoku to Keelung, 18 miles, and from Daitotei to Tamsui, a distance of 14 miles. A line is being surveyed from Taito on the East coast to join the main line on the west coast and its construction is expected to cover a period of over seven years. Besides these lines there are still in operation about 160 miles of narrow gauge, coolies being employed as motive power. These run into many isolated districts and formed the earliest means of transportation. At one time they stretched from one end of the island to the other. Then there are the sugar estate lines of a broader gauge than the coolie lines, the motive power being bullocks or steam. There is over 350 miles of this track of which about 90 miles may be used by the public.

STEAMER CONNECTION WITH CHINESE RAILWAYS.—The proposal of the Board of Posts and Communications made to the China Merchants Steam Navigation Company to arrange connections with the Peking-Mukden Railway at Newchwang, the Peking-Kalgan at Tientsin and the Shanghai-Nanking and the Peking-Hankow at Shanghai is being favorably considered. The proposal includes the sale of tickets by the company to all points on the different lines.

BURMA-YUNNAN PROPOSED RAILWAY.—With the conclusion of the loan agreement which assures the early construction of the Szechuan-Hankow line, the construction of a railway connecting China and India is again being discussed by the British Press. The most favorable scheme is the construction of a line connecting Lashio to Kunlong by the Burma Government. Then the construction of a line from Kunlong to Youchou-fu, a distance of 145 miles, which would cost about $10,000,000 by the Yunnan railway to run along the Yunnanfu-Talifu line and meet the French line at Yunnanfu.

THE HSIN-NING RAILWAY EXTENSION.—It is reported from Peking that permission has been granted to extend this line to Humen thus making Tungkiang more accessible to trade.

F. M. S. RAILWAYS.—The total amount under capital account for open line of the Federated Malay State Railways at the end of 1908 was $46,000,000, approximately, and the number of miles open to traffic 468. The working expenses were 67.81% of the receipts.

JAPANESE ROYAL FAMILY'S INTERESTS IN PUBLIC UTILITIES.—The shares and bonds in banks, railways, steamship companies, etc., owned by the royal family of Japan are valued at $79,680,000, and lands and houses at about $200,000,000, to which should be added imperial palaces and other buildings and grounds in 253 places.

THE CHANG-CHOW-AMOY RAILWAY.—The delay in the construction has been the subject of official notice at Peking and recently orders were issued that the construction now in progress in a dilatory manner should be pressed. This line, when completed and extended to join the different lines connecting with the Peking-Hankow, will connect Amoy by railway with Europe. The line proposed will ultimately be connected with the Kowloon-Canton, Canton-Hankow, Shanghai-Nanking when continued North and South.

THE ANTUNG-MUKDEN RAILWAY RECONSTRUCTION.—The report of Mr. Palen, Acting Commissioner of Customs at Antung, is of interest in reviewing the proposed line as contemplated reconstructed by the Japanese Government. He says in part:

"Without question that feature of Antung's commercial horoscope which reads truest is the prediction of growing importance to follow upon the conversion of the light railway to Moukden into a standard gauge road and the construction of the bridge across the Yalu, which will link up the Korean system with the iron roads of Asia and Europe. The Japanese officials of the South Manchuria Railway Company state that the loan of £2,000,000 recently floated in London will be immediately devoted to this reconstruction work and that the final surveys for the new roadbed are already being made. The general plans sanctioned provide for a northern terminal at Sukiatun, the station on the main line of the South Manchuria Railway, 10½ miles south of Moukden, which also serves as the junction with the line to the Fushun mines. This will give the road a total length of 170 instead of its present 188 miles, and will also save the expense of another bridge across the Hun River. It is likewise proposed, in order to cater to passenger traffic, to retain as much of the scenic beauty of the present line as engineering considerations will permit. The railway officials say that active work will be started in the early spring and that the remodelled line should be completed in three years, that is, during the spring of 1912. From the Korean Railway officials emanates a simultaneous report with reference to the proposed bridge, to the effect that operations thereon will be begun after the summer rainy season has passed, and that the bridge should stand complete by the time the new Antung-Moukden rails are laid."

The line will cost approximately yen 24,000,000. There will be tunneling covering in all a distance of about six miles divided into 30 sections. There will be about 175 new bridges aggregating in length about 4.5 miles. The line will be dotted with about 20 stations. It is estimated that in traveling from Mukden to Moji, when the line is completed, a saving of 31 hours will be made compared with present speed.

For construction purposes the line will be divided into 14 sections and the reconstruction will cover a period of less than three years. It is proposed to manufacture all the steel in Japan and Japanese sleepers will be used. Labor is to be secured along the line. The materials and equipment of the old line will be utilized by the South Manchuria Railway Company in connection with the operation of the Yentai and Fushun Collieries.

INDIAN RAILWAY PROJECTS.—The Railway Board have sanctioned surveys being made by the Agency of the Burma Railways Company for lines of railway on the metre gauge in the Irrawaddy Delta as follows: (1) Henzada to Pantanaw, 65 miles, (2) Ngathaingyaung to a suitable point on the Myogwin-Kamauksu, 27 miles, (3) Kyontani to Ngathaingyaung, 27 miles, (4) Henzada to Akyaw, 28 miles total 47 miles. These surveys will be known as Irrawaddy Delta Surveys.

The Secretary of State has sanctioned the construction, when funds are available, of a railway on the metre gauge from Thazi to Yawnghwe in the Southern Shan States, a distance of 100 miles. The main object of the line is to open up and develop the fertile valleys and plateaus of the Southern Shan States, the progress of which has been much retarded for want of communication.

Sanction has been accorded to an estimate for the final location survey of the Hosur extension of the Merappur-Dharmapuri Railway. Also sanction has been accorded to an estimate for the construction of a narrow gauge tramway at Perambur Works, Madras and Southern Mahratta Railway.—*Railways.*

OLD MANCHURIA ROLLING STOCK.—The Nippon Sharyo Seizo Kaisha and the Kawasaki Dockyard have been awarded the contract for the repair and reconstruction of the cars and locomotives included in the old rolling stock of the South Manchuria Railway and which was removed to Japan. Besides this repair work, it is announced that these firms have received contracts for the construction of 200 passenger and other cars to be completed during the year. This work as estimated will cost about yen 2,000,000.

CONSOLIDATION OF CHINESE RAILWAYS.—The President of the Board of Communications is interested in the consolidation of the management of the Peking-Mukden and the Peking-Hankow Railways. He has appointed a committee to make an investigation into the feasibility of the scheme.

JAPANESE RAILWAY SLEEPERS FOR AMERICA.—The Santa Fe Railway recently ordered a shipment of 170,000 sleepers of Japanese oak for trial on the Kansas Division. The cost laid down is about $2.00, but owing to the durability of the timber which is said to last for 25 years, these sleepers are said to be more economical than American timbers.

THE KIRIN-CHANGCHUN RAILWAY.—The following memorandum was recently given out officially in regard to an agreement reported to have been concluded between the Japanese and Chinese Governments with reference to this proposed railway:

1, that the Engineer-in-Chief and Chief Accountant shall be Japanese; 2, that the agreement shall hold good for twenty-five years, during which period the line shall be worked by the Chinese and Japanese jointly; 3, that the cost of the railway, which is estimated at Tls. 2,500,000, shall be entirely borrowed from the Japanese and the interest thereon shall be five per cent. per annum, computed from the day when the whole sum is paid to the Chinese; and 4, that the receipts of the railway company shall be deposited with the Yokohama Specie Bank in China.

STANDARD GAUGE FOR JAPAN'S RAILWAYS.—The announcement is made semi-officially, that the Japanese Railway Bureau is contemplating the widening of the railways in Japan and that an announcement of the plans of the Bureau will be made during the present year. This extensive scheme of reconstruction was contemplated at the time that the nationalization was originally proposed and it is thought that the plans have sufficiently advanced to undertake it.

THE CHEKIANG RAILWAY.—President S. C. Fang is in receipt of a very complimentary report on the construction of this railway by an American engineer who has been studying conditions and railway construction for his principals in the United States. He directs special attention to the cost of Tls. 60,000 a mile, which is much less than western cost, while the character of construction he reports superior to the initial construction on American lines. On bridge construction, the work satisfied him as being along the latest and best engineering ideas. He directed particular attention to the cheapness of the earthwork which he claimed cost about one-tenth of the outlay in the west. He paid a high compliment to Mr. T. C. Pu, the executive secretary, as an engineer.

SOUTHERN SECTION OF THE SIAM ROYAL RAILWAYS.—The Ministry of Public Works has been directed to continue the work of construction on the Petchaburi Railway southward to Ra-ge. It will be known as the Royal Southern Railway.

KOWLOON-CANTON RAILWAY CONSTRUCTION.—The latest reports from Hongkong are to he effect that construction on the foreshore between Hunghom and Tsimshatsui is progressing very favorably and that from indications everything will be ready for the opening of the line next year. A temporary line will no doubt be operated as soon as the filling and leveling is completed and until the permanent way is under way. The authorities have decided to construct modest stations until the results of operation are made definite.

TRANS-SIBERIAN FREIGHT TRAFFIC FROM THE FAR EAST.—The Russian Ministry of Finance is reported to have authorized the exemption from duty of all freight between China and Western Europe from a frontier station on the Siberian Railway to any frontier station in European Russia. It is expected that this will encourage the transport of goods over the Siberian lines.

SOUTH MANCHURIA RAILWAY WINTER FREIGHT SCHEDULE.—This company proposes arranging the schedule so as to increase the carrying capacity of the road to 8,000 tons a day. This is an increase of about 1300 tons daily.

KOREAN RAILWAYS.—The estimated cost of construction of the Seoul-Gensan and the No-Nam Railways is placed at yen 45,000,000 and arrangements are to be made to have the sum raised so as to be redeemable in six years.

MONGOLIA TRUNK LINE.—A scheme is being entertained by the Ministry of Posts and Communications to construct a trunk line connecting Ili and Tsitsihar which will serve as a main line for feeders from Mongolia and Manchuria.

KIANGYIN-WUSHI MILITARY RAILWAY.—The Board of War has taken up this proposed construction with the Board of Communications.

PEKING-KALGAN RAILWAY EXTENSION.—The Board of Communications has recommended the extension of this line to Suiyuanhing in the extreme north-western point in Shansi by way of Tatungfu and Sopingfu. The cost is estimated at approximately Tls. 60,000,000 and it will take eight years in its construction. It is recommended that the cost will be supplied from the earnings of the Imperial North China Railways.

KIRIN-KUANGCHENGTZE RAILWAY AGREEMENT.—The following is semi-officially reported as being the text of the agreement entered into August 18th at Tientsin between Japan and China in regard to the construction of this line:

(1) The South Manchuria Railway Company agrees to advance to the Chinese Government a sum of Yen 2,250,000 (the actual amount receivable by the Chinese Government is 93 per cent.), half the amount of the expenditure required for the construction of the Kirin-Kuangchengtze Railway, and also a sum of Yen 320,000 (93 per cent. receivable by China), half the amount of the expenditure required for the reconstruction of the Hsinmintun-Mukden Railway.

(2) The money to be advanced shall be paid in Tokio within one month from the date of the signing of the agreement.

(3) The Chinese Government, with as little delay as possible, shall appoint a commissioner to receive the money.

(4) The money earned by the Kirin-Kuangchengtze Railway shall be deposited with the Manchurian branch of the Specie Bank, the amount so deposited being exclusively in currency accepted by the bank.

(5) The Specie Bank shall pay interest on the money deposited at the same rate as is paid on general deposits.

(6) The Chinese Government agrees to repay the money advanced for the construction of the Kirin-Kuangchengtze Railway in twenty years after outstanding five years, and the money advanced for the reconstruction of the Hsinmintun-Mukden Railway in eighteen years from the year in which the agreement was signed. In each case, the payment is to be made in half yearly instalments commencing in the first year of the first year of the periods mentioned.

(7) The money in this agreement shall be paid in Japanese currency.

(8) In the event of either of the parties infringing the agreement, the arbitration of a third party shall be sought.

OBSTACLES TO TRADE WITH CHINA

CONSERVATIVE OBJECTIONS TO MINING IN THE EMPIRE.

(From a Special Correspondent.)

The history of the intercourse of the West with China has been nothing but a record of a continuous struggle to open up land and develop trade with a people who seem imperturbable to all influences from outside. And in a journey through China nothing more than this strikes the traveller, a studious discouragement of mining enterprise.

In nearly all the provinces it is known that the presence of minerals offers opportunities for their development, and even in Szechwan, the great agricultural province of the Empire, among the minerals are gold, silver, cinnabar, copper, iron, coal and petroleum, and yet they are not worked much, and if at all merely by the bungling native methods. Perhaps, however, it will be Szechwan that will become opened up in this respect more speedily than any other province, should the steamship service for the Upper Yangtze, said to be on foot to start in October next, become an accomplished fact.

The Chinese Government has, however, a mistrust which is traditional to all enterprises carried out by private initiative. It is nothing but a scandal that at Ichang, 1,000 miles from the sea, from Shanghai, steamers should be driven to burn Japanese coal when Ichang is situated on what is thought to be one of the richest coal fields in the world. It is, it is true, worked to a small extent at Patung, in the Kweichou and Hsingshan districts on the border of Szechwan, in the Itu and Chihchiang districts, and at Ching-men-chou, but the output is not one-half what it would be with foreign methods. Much of the coal is sulphurous, as I found out the other day when I had the privilege of going over one of these Chinese mines.

There is without doubt a good deal of iron over a wide area throughout the Empire, one of the most successful mines worked by the Chinese being that at Kuanpao in the Ch'angyang district, about a hundred miles west of Ichang; but, again, the total output is small, as local needs around the district of which Ichang is the centre are supplied from Hunan. The province of Kwangsi is known to offer a great field for mining also—the great possibilities are, however, unproved to any extent. However, a geologist stated a short time ago that within one square mile he found, by boring, coal, iron, copper and lead, a richness probably unsurpassed by many individual square miles in the world. In addition to these minerals, others known to exist are gold, silver antimony, asbestos, bismuth, and so on.

The following résumé of the latest approximate figures procurable and the returns in 1867, the first year of the Chinese Imperial Customs and more recent times, is interesting.

Metals in 1867 were valued at 1,630,351 taels, a little over two per cent of all imports, and a couple of years ago at roughly 46,500,000, no less than ten per cent of the whole. Copper imports reached 11,150 piculs (198,017 taels), and now they are not much less than 986,000 (say 32,000,000 taels.) Lead (57,780 and 144,000 piculs) is wanted chiefly for packing tea, and tin (32,000 and 55,000 piculs) chiefly for making tin-foil and those paper simulacra of silver bullion which are offered so profusely in religious worship, specially at the ancestral tombs. Tinned plates in 1867 amounted to 1,744 piculs, and to-day this figure is swelled to something approximating 182,500 piculs, in addition to a considerable quantity of second-hand plate coming as lining tin cases containing piece goods, kerosene oil and other commodities. China is a land of poverty and thrift, and the quantity of this latter is estimated at not less than 500,000 piculs a year. If it is to be taken that the index of industrial progress is the consumption of iron and steel, then China is after all moving on in the great progressive march of the world. Imported into China in 1867 were 7,000 tons, and this has gone on now to the tremendous figure of no less than 162,000 tons, and probably more. This is extremely satisfactory, but it contains another indication of the thriftiness—and poverty—of the people. This last figure is probably made up by almost one-half of old iron, plate cuttings, and so on, discarded from Western markets, coming mainly from Great Britain.

So it will be seen that the country is going ahead in the consumption of minerals and metals, but it is the one thing against her many admirable commercial capabilities that she keeps back mining. Trade in general, and mining in particular, cannot be left to take care of themselves in China as they could be in the West, and I think it is to the interest of all Governments now concerned—and very few are not; China is safeguarded with so many international treaties that no country can prey upon her if they would—in the improvement of trade and the prosperity of mining, railroads and manufactures to do their utmost to bring about an alleviation of the prevailing conditions. I do not lose sight of the fact that Britain especially has been pounding away at the Chinese Government more or less successfully for the last thirty or forty years—notably since the Chefoo convention in 1876—and nothing seems to have come of it, but whatever progress has been made has been due to pressure, and only by pressure will any concession be obtained. In a conversation with an enlightened Chinese official the other day, he gave it as his opinion that to do anything the pressure must be kept up. We all know how little the Chinese, despite the great "awakening" now being talked of, will do of herself; she will do absolutely nothing. However, it is generally thought that it is merely this enforced pressure by foreign Governments upon the Chinese officials—who *can* be urged—to enforce them loyally to carry out their obligations to promote trade and open their land, that any reform can be looked for. It must be remembered that it requires an energy to do this in spite of disheartening effects of the perpetual procrastination of the Government and of the people.

Should this come about, there will be in Asia such a field for the outlet of European and American capital and brains that China must forge ahead and soon become what is predicted for her two hundred years to come—the greatest nation in the world. But as it stands no foreigner is allowed to have much to do with the mines and the natives are prevented from working on a large scale even if they would, owing to the dread the mandarins have to any assemblage of unruly men such as miners are supposed to be. So the mineral wealth of the country lies undeveloped, while thousands of able-bodied men go about begging their bread. And another very weak excuse is that the minerals would be used up.

China, Manchuria, Japan, Indo-China, Siam, Straits Settlements, Malay States, Burma, India, Malaysia, and the Philippines

ILLUSTRATED FEATURES

The East Batan Coal Mines—The Philippine and American Trade Expansion—The Priestman Dredge—The Chinese Army: : : : : : : : : : :

THE FAR EASTERN REVIEW

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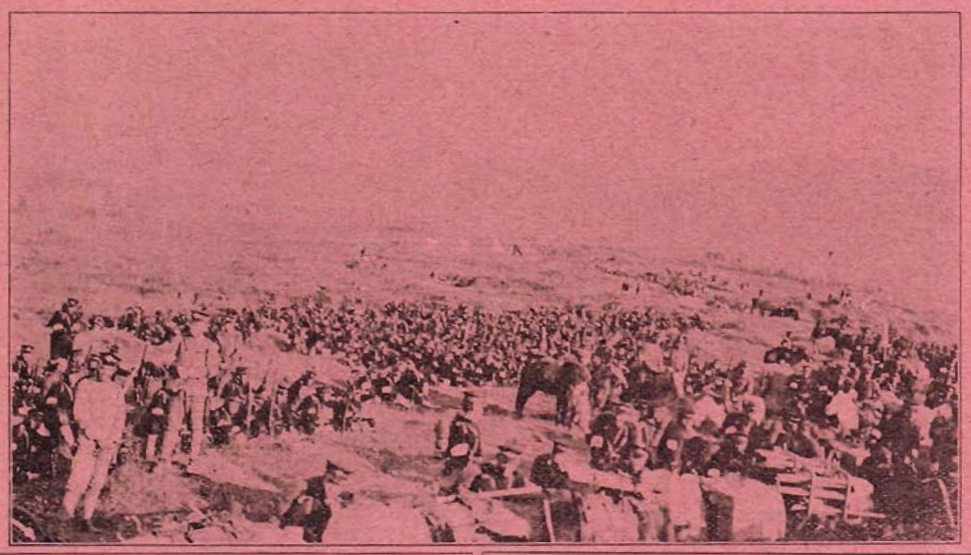
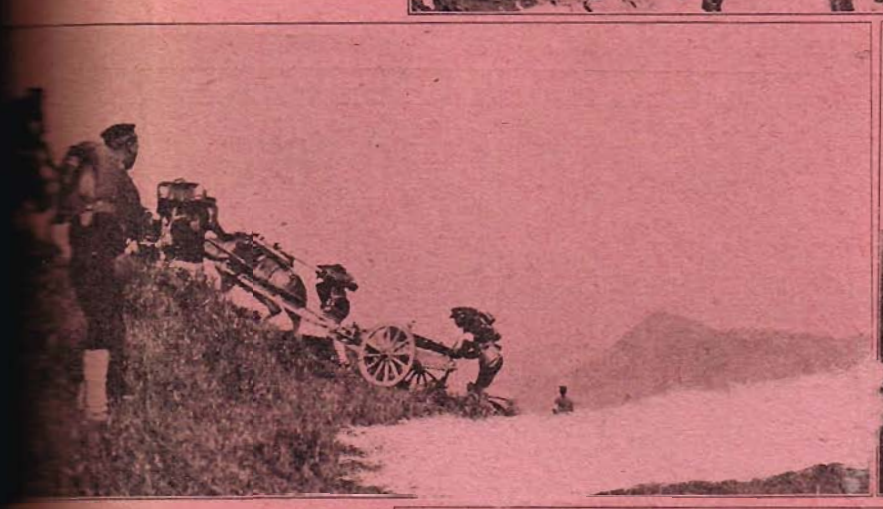
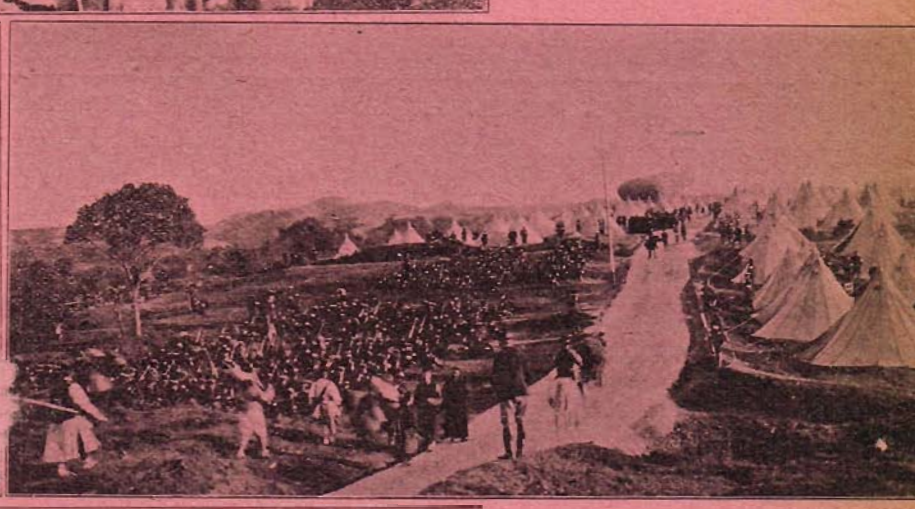
CHINESE ARMY

ANHUI MILITARY MANEUVERS SHOWING







(1) INFANTRY AT HALT—(2) CHINESE ARTILLERY PULLING GUNS INTO POSITION—(3) INFANTRY CAMP—(4) ENGINEER CORPS AND ENTRENCHMENT.

ENGINEERING

COMMERCE & FINANCE

FAR EASTERN RAILWAY NEWS

KIANGSU-CHEKIANG RAILWAY.—The Yuch'-uanpu has memorialized the Throne to have the management of this line placed under its control.

CHINESE TIMBER FOR RAILWAY SLEEPERS.—The railway authorities have been making investigation of the adaptability of timber grown in Yunnan, Kiangsu, Hunan, Fukien, Kueichou, Hopeh and Honan with the result that the different railway companies have been instructed to purchase Chinese timber for railway construction wherever possible instead of the imported article.

KOWLOON-CANTON RAILWAY.—Mr. S. S. Lindsay, Deputy Chief Engineer of the South India Railway, will assume the duties of Chief Engineer of this line and will devote much of his time to the organization of the traffic.

CHINESE EASTERN RAILWAY EXTENSION.—Russia has completed the extension of the line to Tsitsihar, a distance of five miles. It was opened on September 27th.

SZECHUAN-TIBET RAILWAY.—The construction of this projected line has been the subject of much discussion in Peking. There has been some difference of opinion as to how the funds for construction should be realized. H. E. Hsu Shih Chang favored the raising of the money by a foreign loan, and Prince Tsai Tse expressed strong disapproval of such a course with the result that for the moment the matter of financing the project has been postponed.

KANSU-TURKESTAN RAILWAYS.—The Prince Regent is greatly interested in the construction of railways from Kansu province to Chinese Turkestan and has directed the Ministry of Finance to make a report on the best means to finance these projects.

ANTUNG-MUKDEN RAILWAY CONSTRUCTION.—The question of duty on materials for the construction of this line is the subject of disagreement between the Chinese and Japanese authorities. The Japanese want the suspension of duties as provided in the Chinese Eastern Agreement with Russia. The Chinese demand that duties be imposed. For the present the customs authorities are keeping a record of the materials brought in and it is expected that the matter will soon be amicably settled.

JAPANESE RAILWAYS.—The Government has paid the 17 railways taken over the sum of yen 379,389,550 in the form of bonds leaving a balance of yen 96,929,250 which is expected paid by the end of the year.

SOUTH MANCHURIA ACTIVITY.—The South Manchuria Railway expects to complete the doubling of the line as far as Sukiatung by the last of the present month. This will mean the completion of a double track on this system for a distance of 230 miles. There is also prospect that the company will build right into the city of Newchwang. This means about three miles of additional road.

TOKYO-NAGAOKA RAILWAY.—A charter has been granted the promoters of this project which will connect the capital by rail with Nagaoka, on the west coast in the province of Echigo. The proposed line when completed will be 146 miles in length and cost in the vicinity of yen 6,000,000. The prospectus of the company has not yet been issued.

RAILWAY SUPPLIES.—The Japanese press reports the formation of a vehicle trust, in which the Railway Car Manufacturing Company, The Kawasaki Dock Company and the Japan Vehicle Company are interested. Marquis Inouye is said to have assisted the promoters. The first order is for the repair of 200 locomotives for the South Manchuria Railway Company.

KOREAN RAILWAY CONSTRUCTION.—The work of construction on the Pyongyang-Chinnampho Railway which is to connect Pyongyang with a point at the mouth of the Tadong River, a distance of 38 miles, is being pushed with vigor. The work is divided into five sections, all under construction simultaneously. The harbor of Kyomi-pho is about half way between the two places. It is understood that the authorities have decided to construct the Seoul-Gensan Railway in preference to the other projected routes under consideration for the year. It is considered that this line is of the greatest importance and as it is not possible to carry out the entire program of railway building in Korea at this time, it was decided to concentrate all efforts in pushing this line to completion.

CHINESE EASTERN REDEMPTION.—The Peking Government has instructed the Wai-Wu-Pu to open negotiations with the Russian Government with a view to redeeming the Chinese Eastern Railway.

JAPAN RAILWAY REVENUES.—The Railway Bureau estimates the revenue from the system for 1910 at yen 90,000,000 and the expenditure at yen 80,000,000. The extensions and improvements are estimated to amount to yen 40,000,000.

BAIKAL CIRCULAR RAILWAY.—The Russian Government has decided to double track the line as surveyed round Lake Baikal.

SUPPLIES FOR THE MUKDEN-ANTUNG CONSTRUCTION.—The Tiehling Flour Mill has secured the contract to supply flour for the laborers on this work and as it is estimated that 50,000 coolies will be employed, the contract is one of some magnitude.

KIRIN-HOIRYONG RAILWAY.—This proposed line, to which the recent China-Japan agreement refers, will run from Kirin via Tungchwacheng and Hwangtung-hostz to Chientao and from the last named point to Hoiryong. The total distance is 225 miles. It is said that definite arrangements were concluded at Peking for the immediate construction of this line.

JAPANESE SLEEPERS FOR THE TIENTSIN-PUKOW.—The China Import and Export Company concluded its contract for the delivery of 50,000 ties of the best oak to this company last month.

ROYAL STATE RAILWAYS OF SIAM.—The report of the Director General for the year 127 shows 844.8 kilometers of line in operation, of which 67.7 kilometers were added on the Northern Section, Pitsanuloke-Utaradit, when the line was opened to Ban Dara, November 11th, 1908. Of this length 693.4 is of 1.435 meter gauge and 151.4 of 1 meter gauge. The gross receipts were 4,188,714 ticals and the net gain 2,249,566 ticals. The cost of operation and maintenance in all departments was 39.58% of the gross receipts. The increase in mileage was 31.17% and the increase in expense 27.14%. The receipts for passenger traffic amounted to 2,672,064 ticals and from freight carrying and other sources 1,516,650. The expenditure for new works amounted to 1,125,484 ticals. The following tenders were received for the supply of portable railway track and cars for the Southern Railway:

G. Kluzer, Bangkok, accepted, delivery at Trang and Singora	£750.0.0
Hamburg-Siam Gesellschaft, Bangkok	818.0.0
Delivery at Singapore and Penang, Bangkok Dock Co., Ltd	685.0.0
Delivery at Trang and Singora, Riley Hargreaves, Singapore	620.0.0
Delivery at Trang and Singora, Howarth Erskine, Ltd., Bangkok, Delivery at Singora	615.0.0
Delivery at Penang Singora	584.0.0
Behn Meyer and Co., Bangkok, Delivery at Trang and Singora	596.6.8
John M. Dunlop, Bangkok, Delivery at Trang and Singora	565.0.0

NANKING CITY RAILWAY EXTENSION.—The extension of this line, which connects Nanking with the port of Hsai Kuan, is to be extended to Wuhu, a distance of 60 miles, and will tap one of the richest rice sections in China.

RUSSIAN RAILWAY GRAIN ELEVATOR.—The Siberian Railway is constructing a large elevator at Tchalabinsk having a capacity of over 600,000 tons.

OFFICIAL TEXT OF RECENT AGREEMENTS BETWEEN CHINA AND JAPAN.—Respecting Korea and Manchuria and Railway Disputes.

Chientao.—The Imperial Government of Japan and the Imperial Government of China, desiring to secure for Chinese and Korean inhabitants in the frontier the blessings of permanent peace and tranquility, and considering it essential in the attainment of such desire that the two Governments should, in view of their relations of cordial friendship and good neighbourliness, recognize the River Tumen as forming the boundary between China and Korea, and should adjust all matters relating thereto in a spirit of mutual accommodation, have agreed upon the following stipulations:—

Article I.—The Governments of Japan and China declare that the River Tumen is recognized as forming the boundary between China and Korea, and that in the region of the source of that river, the boundary line shall start from the Boundary Monument and thence follow the course of the Stream Shihyishwei.

Article II.—The Government of China shall, as soon as possible after the signing of the present Agreement, open the following places to the residence and trade of foreigners and the Government of Japan may there establish Consulates or Branch offices of Consulates. The date of the opening of such places shall be separately determined:—Lungchingtsun, Chutzechie, Toutaokou and Paitsaokou.

Article III.—The Government of China recognizes the residence of Korean subjects, as heretofore, on agrieultural lands lying north of the River Tumen. The limits of the district for such residence are shown in an annexed map.

Article IV.—The Korean subjects residing on agricultural land within the mixed residence district to the north of the River Tumen shall submit to the laws of China, and shall be amenable to the jurisdiction of the Chinese local officials. Such Korean subjects shall be accorded by the Chinese authorities equal treatment with Chinese subjects, and similarly, in the matter of taxation and all other administrative measures, they shall be placed on equal footing with Chinese subjects. All cases, whether civil or criminal, relating to such Korean subjects shall be heard and decided by the Chinese authorities in accordance with the laws of China, and in a just and equitable manner. A Japanese Consular officer, or an official duly authorized by him, shall be allowed freely to attend the Court, and in the hearing of important cases concerning the lives of persons, prior notice is to be given to the Japanese Consular officers. Whenever the Japanese Consular officers find that a decision has been given in disregard of law, they shall have the right to apply to the Chinese authorities for a trial to be conducted by officials specially selected, in order to assure justice of the decision.

Article V.—The Government of China engages that land and buildings owned by Korean subjects in the mixed residence district to the north of the River Tumen, shall be fully protected, equally with the properties of Chinese subjects. Ferries shall be established on the River Tumen at places properly chosen, and people on either side of the river shall be entirely at liberty to cross to the other side, it being, however, understood that persons carrying arms shall not be permitted to cross the frontier without previous official notice or passports. In respect of cereals produced in mixed residence district, Korean subjects shall be permitted to export them out of the said district, except in time of scarcity, in which case such exportation may be prohibited. Collection of firewood and grass shall be dealt with in accordance with the practice hitherto followed.

Article VI.—The Government of China shall undertake to extend the Kirin-Changchun Railway to the southern boundary of Yenchi, and to connect it at Hoiryeng with a Korean railway, and such extension shall be effected upon the same terms as the Kirin-Changchun Railway. The date of commencing the work

of the proposed extension shall be determined by the Government of China, considering the actual requirements of the situation, and upon consultation with the Government of Japan.

Article VII.—The present Agreement shall come into operation immediately upon its signature, and thereafter the Chientao Branch Office of the Residency-General, as well as all civil and military officers attached thereto shall be withdrawn as soon as possible, and within two months. The Government of Japan will, within two months hereafter, establish its Consulates at the places mentioned in Article II.

In witness whereof the undersigned, duly authorized by their respective Governments, have signed and sealed the present Agreement in duplicate, in the Japanese and Chinese languages.

The 4th day of the 9th month of the 42nd year of Meiji.

The 20th day of the 7th month of the 1st year of Hsuan Tung.

HIKOKICHI IJUIN.
LIANG TUN-YEN.

Manchuria.—The Imperial Government of China, actuated by the desire to consolidate the relations of amity and good neighbourliness between the two countries, by settling definitely the matters of common concern in Manchuria, and by removing for the future all cause of misunderstanding, have agreed upon the following stipulations:—

Article I.—The Government of China engages that in the event of its undertaking to construct a railway between Hsinmintun and Fakumen it shall arrange previously with the Government of Japan.

Article II.—The Government of China recognizes that the railway between Tashichao and Yinkow (Newchwang) is a branch line of the South Manchurian Railway, and it is agreed that the said branch line shall be delivered up to China simultaneously with the South Manchurian Railway upon the expiration of the term of concession for that main line. The Chinese Government further agrees to the extension of the said branch line to the port of Yinkow (Newchwang).

Article III.—In regard to the coal mines at Fushun and Yentai the Governments of Japan and China are agreed as follows:—

(a) The Chinese Government recognizes the right of the Japanese Government to work the said coal mines.

(b) The Japanese Government respecting the full sovereignty of China, engages to pay the Chinese Government tax upon coals produced in those mines. The rate of such tax shall be separately arranged upon the basis of the lowest tariff for coals produced in any other places of China.

(c) The Chinese Government agrees that, in the matter of the exportation of coals produced in the said mines, the lowest tariff of export duty for coals of any other mines shall be applied.

(d) The extent of the said coal mines, as well as all the detailed regulations, shall be separately arranged by commissioners specially appointed for that purpose.

Article IV.—All mines along the Antung-Mukden Railway and the main line of the South Manchurian Railway, excepting those at Fushun and Yentai, shall be exploited as joint enterprises of Japanese and Chinese subjects, upon the general principles which the Viceroy of the Eastern Three Provinces and the Governor of Mukden agreed upon with the Japanese Consul-General in the fortieth year of Meiji, corresponding to the thirty-third year of Kuangsu. Detailed regulations in respect of such mines shall, in due course, be arranged by the Viceroy and the Governor with the Japanese Consul-General.

Article V.—The Government of Japan declares that it has no objection to the extension of the Peking-Mukden Railway to the City Wall of Mukden. Practical measures for such extension shall be adjusted by the local Japanese and Chinese authorities and technical experts.

In witness whereof the undersigned, duly authorized by their respective Governments, have signed and sealed the present Agreement in duplicate, in the Japanese and Chinese languages.

The 4th day of the 9th month of the 42nd year of Meiji. The 20th day of the 7th month of the 1st year of Hsuan Tung.

HIKOKICHI IJUIN.
LIANG TUN-YEN.

AUSTRALIA'S TRANS-CONTINENTAL LINE.—The Northern Territory Bill under consideration has for its purpose the taking over of the debt of the territory, the purchase of the Port Augusta-Oodnadatta Railway and the construction of a trans-continental line connecting the Northern Territory with South Australia. The cost of this line would be about $23,000,000 and would tap a wonderfully fertile country.

JAPAN'S RAILWAY SERVICE.—The number of officials and employees under the Railway Board is 89,868, of which 87,827 are male and 2,041 female. Their annual salaries amount to 88,480,000 yen averaging only 17.13 yen per month per capita.

FRENCH TONKIN RAILWAY.—The line is now within a few miles of Yunnanfu and it is expected that service will be inaugurated by the first of November. The terminus at Yunnanfu has been completed for some time and with its offices, shops and warehouses. The extension of this line to Luchow in Szechuan is now being discussed.

SURYNEN CHENG-PEKING-KALGAN EXTENSION.—The Board of Posts and Communications has decided to extend the Peking-Kalgan line to Surynen Cheng. The survey and estimates have been completed and the cost is estimated at $20,000,000 and two years required for the completion.

THE KOWLOON-CANTON RAILWAY (BRITISH SECTION).—The estimates for construction expenditure on this section for 1910, amount to $1,800,548 which, added to the $10,015,223 expended up to the end of 1909, will amount to close to $12,000,000. Of the amount for 1910, $60,000 represent expenditure for workshops, $238,300 for station buildings and equipment, and rolling stock $307,440. Traffic receipts for the year are estimated at $20,000.

KIRIN-KUANGCHENGTZE RAILWAY.—The work of surveying this line will begin early in the spring under the direction of the Japanese Chief Engineer. It is the purpose of the authorities to press the work with all expedition and so as to complete the line within a year from next March.

RAILWAY OFFICIALS APPOINTED.—Taotai Jeme Tien-Yow, who so successfully directed the construction of the Peking-Kalgan Railway, has been appointed General Manager of the Szechuan-Hankow and the Peking-Shiyuan lines. Kuan Mien-chun succeeds to the management of the Peking-Kalgan line.

TSITSIHAR-HUNCHUN PROJECT.—The Russian Government has filed a petition for permission to construct a line connecting these two points basing their claim for recognition on the privilege granted the Japanese in the reconstruction of the Antung-Mukden line.

CHEKIANG RAILWAY COMPANY.—This company has been instructed by Peking to extend its line to Sanao on the South and the Tientsin-Pukow line on the North.

CANTON-MACAO RAILWAY.—The proposal by the Portuguese to construct and operate the proposed line jointly has been renewed, and an investigation is being made into the financial standing of the present concessionaire as to his ability to carry out the work. It is probable that China will decide to construct this line on her own account.

KASHING'S RAILWAY CONNECTION.—Three trains run daily between Kashing and Hangchow and two from Hangchow to Shanghai. From reports received this line is in good condition and admirably directed.

JAPAN'S THROUGH RAILWAY LINE.—By the end of November it will be possible to proceed by railway from the northern part of Hokkaido to the southern part of Kyushu.

CHAO-CHOW SWATOW RAILWAY.—Director General Chang Pih-shih has returned $800,000 to the Japanese capitalists and $200,000 borrowed from the Formosa Bank, thus eliminating Japanese influence from the operation of this line. This action was the result of a strong reprimand from Peking.

CONTRACTING NEWS

SHANGHAI MUNICIPALITY.—Erection Goods Lift for Electricity Works.—Messrs. Samuel McGregor & Co., Ltd., were awarded the contract at £411, the other tenders were:

	£
Shewan, Tomes & Co.	428
Siemssen & Co.	460
Brighten, Malcolm & Co., Ltd.	475
Shanghai Dock & Engineering Co., Ltd. Tls. 4,250.	496
Shanghai Electric & Asbestos Co., Ltd.	511
Anderson, Meyer & Co.	518
Innis & Riddle	545
Siemens Schuckertwerke	578
Scott, Harding & Co.	650
Jardine, Matheson & Co., Ltd.	935
Arnhold, Karberg & Co.	965

MUNICIPALITY SINGAPORE—COAL.—The tender of Messrs. McAlister & Co. to supply 2,000 to 3,000 tons of Hetton at 22/ ex-ship Singapore or the same amount of Abermain at 21/ shipments to be made in November and January next.

MARITIME CUSTOMS, PEKING.—Erection concrete water tanks at Swatow—Awarded Messrs. Howarth Erskine Ltd.

MUNICIPALITY SINGAPORE.—34 steel stanchions. Awarded Messrs. Riley Hargreaves & Co., Ltd. Price $1,200.

U. S. COMMISSARY, MANILA.—Vegetables. Awarded Hashim & Co., Manila. Price: Potatoes, ₱3.98; and Onions, ₱4.48 per cwt. The other bidder was the firm of Messrs. Castle Bros.-Wolf & Sons, Potatoes, ₱4.50, and Onions ₱4.20 per cwt.

U. S. NAVY-ELECTRICAL SUPPLIES.—Awarded Philippine Electrical Supply Company. 500 brass key sockets at ₱0.399 each; 30,000 ft. R. C. Wire at ₱0.029 per ft. The other bidders were F. L. Strong, F. R. Thompson, Germann & Co. The Electrical Supply Co. were not the lowest bidders but secured the contract on agreement to give immediate delivery.

TENDERS INVITED.—H. B. M. Naval Yard, Hongkong.—Timber Material Supply for One Year of Teak, American Fir, Oregon Pine, Camphor Wood, Hardwoods, in bulk, thick stuff, scantling, plank and board. Further information address Naval Store Officer, H. M. Naval Yard.

TENDERS INVITED.—Bureau of Supply, Paints and Hardware, Manila, opened November 1st; Hospital Furniture including hardware, glassware, enameled ware, bottles, electrical equipment, etc., to be opened December 15th; hardware, plumbing supplies, etc., to be opened November 22.

FOR SALE

Patent Slip supplied to H. H. The Rajah of Sarawak by Messrs. Day Summers & Co., Ltd., of the Northam Ironworks, Southampton, England, for sale f. o. b. Kuching, Sarawak. The Slipway has never been erected and was designed to take a vessel of a total displacement of 570 tons, 44′ 6″ over paddle-boxes, 175 ft. long drawing 1′ 1½.″ All complete including winding gear and rails, except for the boiler and can be seen lying here. Full particulars will be supplied to any bona fide enquirer on application being made to the undersigned.—H. F. CARRW-GIBSON, *Commissioner of Public Works and Surveys.*

China, Manchuria, Japan, Indo-China, Siam, Straits Settlements, Malay States, Burma, India, Malaysia, and the Philippines

THE FAR EASTERN REVIEW

VOL. VI. MANILA, SHANGHAI AND YOKOHAMA, NOVEMBER, 1909. No. 6.

RAILWAYS IN CHINA
1909

His Excellency HSU SHIH CHANG,
President of the Board of Communications

Railway Loan Agreements
and
Their Relation to the Open Door

A PLEA FOR FAIR PLAY TO CHINA

By GEO. BRONSON REA

A DESCRIPTION OF ALL THE RAILWAYS IN CHINA

PROFUSELY ILLUSTRATED

PRICE: 75 Cents Gold, ₱1.50 Philippine Currency, $1.75 Mexican.

ENGINEERING
COMMERCE FINANCE

SUPPLEMENT TO
THE FAR EASTERN REVIEW
November, 1909.

His Excellency HSU SHIH-CHANG,

PRESIDENT OF THE BOARD OF POSTS AND COMMUNICATIONS

A native of Chili Province, has filled the posts of Grand Councillor, Minister of Government Council, President of Board of Police, President Board of Interior, and other high offices. Appointed first Viceroy or Governor General of Manchuria in April, 1907, and in May of this year was transferred to Peking, as head of the Railway Board. In August he was also appointed to the Office of Director General of the Tientsin-Pukow Railway. One of China's capable and honest executives.

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THE FAR EASTERN REVIEW

COMMERCE ✪ ENGINEERING ✪ FINANCE

VOL. VI. MANILA, P. I., SHANGHAI, AND YOKOHAMA, NOVEMBER, 1909 No. 6.

RAILWAY LOAN AGREEMENTS

AND THEIR RELATION TO THE OPEN DOOR

HIS EXCELLENCY WANG TA-HSIEH,
VICE-PRESIDENT OF THE YUCHUANPU
(BOARD OF COMMUNICATIONS.)

A PLEA FOR FAIR PLAY TO CHINA

BY

GEO. BRONSON REA.

HIS EXCELLENCY SHEN YUN-PEI,
ACTING VICE-PRESIDENT OF THE YUCHUANPU
(BOARD OF COMMUNICATIONS.)

WHEN China first conceded to Belgium and America the right to build her main trunk line, she distinguished between them by retaining control of the funds in the Belgium Agreement, and conceding to Americans full power over expenditure on their section. At that time the utter ignorance about railway matters amongst the Chinese induced them to grant exceptional powers to foreigners, and the question of the honesty of their officials was not made an issue in the agreements. Both of these contracts have since lapsed and are only interesting as marking a turning point in China's history, by creating a precedent since followed up by other moneylenders exacting full control over railway loan funds.

On the 17th day of June 1898, when China contracted her foreign loan for the Peking-Newchwang Line, she voluntarily admitted the principle that her officials were incompetent to honestly administer the proceeds of a foreign loan to the satisfaction of the investor. And having once placed her financial probity in question, she has been forced through successive similar agreements to follow a practice which no other nation in the world would tolerate for an instant. Through all subsequent loan negotiations China has been made to feel the mortification of the foreign assumption that although her security is good, her integrity is rotten. On the assumption that Chinese officials could not be entrusted with full powers of expenditure, only honest and capable foreigners could control loan funds, or as in later years when China reasserted a little of her dignity, this privilege was accorded to her under foreign check and supervision of accounts. In short, while China could give ample security and pay good interest, she could not be trusted with the expenditure of the money. And under the provisions of loan agreements based on these principles, China has been deprived of authority in her own affairs, and the national commercial and political interests of money lenders advanced without coming into direct conflict with the Open Door Doctrine.

Under the terms of the Peking-Newchwang Loan for £2,300,000, the British and Chinese Corporation entered into an agreement with China for 45 years, which gave them practical control of the property, and inserted a wedge for British railway principles which, if driven home, would effectively destroy the chance of American or Continental railway supplies gaining a foothold in China. This loan was guaranteed by a first mortgage on the entire property between Peking and Shanhikwan, and on the freights and earnings of the new lines when constructed. This in itself is sufficient guarantee for a loan in any other country, but we find in addition that the Imperial Government of China unconditionally guaranteed and declared itself responsible for the payment of the principal and interest.

The term was for 45 years, and China engaged herself not to redeem or convert the loan except as arranged with the Corporation, and no further loan was to be raised on the same security except through the Corporation, and the lines named in the Agreement were never to be alienated or parted with. This insured the Corporation a lien on the road during the 45-year life of the Agreement.

One of its first provisos was the expenditure of about $1,000,000 gold for new rolling stock as recommended by the Engineer, and further along we find that during the currency of the loan the Chief Engineer of the Railway shall be a British subject, and the principal members of the Railway Staff shall also be Europeans, who could be appointed by the Chinese Administrator General, but

H. E. TSEN CH'UN-HSUAN,
EX-PRESIDENT OF BOARD OF COMMUNICATIONS.

H. E. SHENG KUNG-PAO, SHENG HSUAN HUAI,
TITULAR VICE-PRESIDENT OF BOARD OF COMMUNICATIONS, ETC., THE FORMER DIRECTOR GENERAL OF RAILWAYS, WHO SIGNED THE LOANS, FOR THE CANTON-HANKOW—PEKING-HANKOW—CHOU-TAI-PRINLO—AND SHANGHAI-NANKING RAILWAYS.

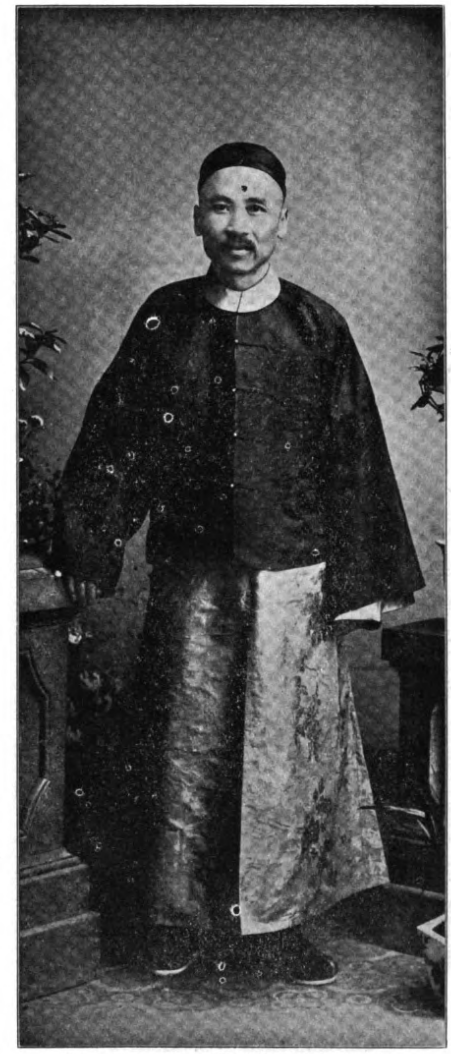
dismissed only in the event of misconduct or incompetency, after consultation with the Chief Engineer. Or in other words, the latter had powers superior to the Chinese head of the Railway. A European accountant was also provided for, to act with the Administrator General and Chief Engineer in the supervision of Receipts and Expenditures. Probably no loan ever made was so amply secured and safeguarded. Mortgage on the property was strengthened by Imperial Government guarantee, and as a check on this ample security, a Chief Engineer, named by the Corporation, had practical control of affairs. The price of the loan to China was 90, but the Corporation had authority to reduce it to 88 at its own discretion in case the market was unfavorable. The operation of this agreement has been advantageous to both sides. In view of the unsettled state of affairs in China ten years ago, too many safeguards could not be thrown around any foreign loan of importance, so the Corporation in defending the interests of investors had to exact terms, which would be impossible to secure now, and China in her peculiar situation had to accept them.

The prospectus of the loan was no sooner issued than an official remonstrance was made by Russia to the effect that the appointment of the Chief Engineer and Accountant constituted "foreign control of the line," and this objection was only withdrawn after the understanding with Great Britain as to their respective spheres of railway influence. In view of subsequent developments, Russia's attitude has been amply vindicated. We find that the natural increase of traffic over the road soon placed it on a financial basis far beyond the original hopes entertained for its prosperity. The earning capacity of the line, expressed at the rate of interest returned on the capital value, rose from $4\frac{3}{4}$ per cent in 1903 to 7 per cent in 1904, $20\frac{3}{4}$ per cent in 1905, $18\frac{1}{4}$ per cent in 1906, 13 per cent in 1907 and 18 per cent in 1908. The surplus profits were sufficient to pay off the loan in three years or justify its conversion if untrammelled by the Agreement. From the surplus profits the new Kalgan line has been constructed and equipped at a cost of over £1,100,000, or half the value of the Loan. It is natural under these circumstances that the Chinese would chafe under the yoke which forced them to acknowledge the Chief Engineer as the dominant factor in the Road. The authority ceded to him under the Agreement was tantamount to an additional guarantee to an over guaranteed mortgage, and when the property had demonstrated its ability to over insure the amount of the Loan, and the Chief Engineer still insisted on enjoying all the prerogatives allowed him under the Agreement, the Chinese naturally resented an attitude which reflected on their capacity and integrity.

The ability of Mr. Kinder, the retired Foreign Director and Chief Engineer, is undoubted, and there is no hint or insinuation against his honesty or capacity in the Chinese side of the argument. But they do contend that despite his kindly nature and retiring manners Mr. Kinder retained all the authority his position allowed him and refused to recede from his attitude, even when it was acknowledged that the Loan was many times over guaranteed by the property. Out of def-

H. E. TANG SHAO-YI,

GRADUATE OF COLUMBIA UNIVERSITY, NEW YORK. DIRECTOR-GENERAL OF THE SHANGHAI-NANKING RAILWAY WHILE UNDER CONSTRUCTION.



HIS EXCELLENCY TAOTAI K. S. LOW,

MANAGING DIRECTOR OF THE TIENTSIN-PUKOW RY., SOUTHERN SECTION. GRADUATE OF TROY POLYTECHNIC INSTITUTE. HIS UNSWERVING FIDELITY TO HIS COUNTRY'S INTERESTS HAS CALLED DOWN ON HIM THE UNJUST CRITICISMS OF FOREIGNERS.

erence to Chinese feelings and opinion they contend his authority should have relaxed to a nominal supervision, permitting them fuller liberty of action in the management. As the Chinese capital interest in the road is $21,994,428 Mex. against $24,840,000 represented by the Loan at the end of 1908, or about equal at the present writing, they have every incentive to maintain the road at a high standard to insure increased profits.

Under the terms of the Loan Agreement Mr. Kinder dominated the situation for the last ten years or up to his retirement in April last. It is only natural that in consequence British railway principles largely prevail on the I.R.N.C., and if his policy had been approved by the Chinese Government, they would extend to every road in China to the exclusive benefit of British railway materials and consequent disadvantage to all others. To this end the Shanhikwan Works were erected and bridge construction for the I.R.N.C. and other roads in China undertaken. The amount of new bridge work on the I.R.N.C. would never justify the erection of such an extensive plant, so we are forced to conclude that the main objective was a monopoly of such work throughout the Empire. With engineers in charge specifying standards and following bridge principles prevailing in Great Britain, the logical end meant the monopolization of the Chinese market for British steel manufacturers. That this end is aimed at is indicated by the fact that the Works will be forced to close down for lack of orders, and attempts have already been made by the Chinese Directors of the I.R.N.C. to have other roads in China compelled to patronize them

As to the car and locomotive works at Tongshan, the same argument holds good. British locomotive and car practice predominates and in erecting the extensive car shops the idea was to concentrate at this point the building of the cars at least, for other roads in the Empire. The standards set by the I.R.N.C. have been accepted by the Board of Communications, and only the stubbornness of provincial companies prevent

their general adoption, and with roads constructed under foreign loans of course they cannot be enforced. Tenders for materials on the I.R.N.C. under Mr. Kinder's régime were not always thrown open for general competition, despite the clause of the Additional Agreement of 1902. He established the principle that only certain first class makers could tender, against the protests of other interests. It is true that some locomotives were purchased from America, but their record on the I.R.N.C. has been used by other engineers to disparage their use on other roads in China. It goes without saying that Mr. Kinder's intentions were based on sound principles; China must sooner or later adopt a standard railway practice in cars and locomotives, and anyone who can bring this about, with fairness to both European and American manufacturers, is entitled to all due honors and rewards. But any attempt to induce China to adopt standard regulations drawn up by an engineer of any one nationality, working under the protection of a Loan Agreement, must be viewed with deep concern by competing interests. In this one point the Peking-Newchwang Loan Agreement is not only a direct menace to American and Continental participation in the future railway business in China, but limits British sales to a few approved concerns.

It cannot be urged that this end was in view when the Loan was made or that the British engineers are deliberately following this line of action, but the gradual development of such a policy follows as a natural sequence to the employment of a British Chief Engineer for 45 years on a railway so closely in touch with the Central authorities in Peking.

Following closely on the heels of the Peking-Newchwang Loan came the Peking-Hankow Agreement placed through Belgian financiers. The terms entered into the previous year were much more favorable to China than the British agreement, in that it gave the Chinese authorities greater control of the property. The Loan was for £4,500,000, issued at 90 and in the original draft bore interest at 4%. As the Belgians found the loan could not be successfully floated on this basis, certain charges were added in a supplementary agreement bringing the interest up to 4.4%, and in the final draft terms almost similar to the Peking-Newchwang Loan were secured at 5%, the currency of the Loan to be 20 years. The security was a mortgage on the property guaranteed by the Imperial Government. The Belgian Syndicate secured the right to order all the supplies for the line, subject to the approval of the Chinese Director General. The work of construction and technical control was under a Chief Engineer appointed by the Syndicate, subordinate to the Director General. The Chief Engineer could select the foreign railway staff, but appointments could only be made by the Director General, who also had absolute power of dismissal for cause without reference to the Engineer. All material exclusive of what could be secured in China was to be purchased abroad through the Syndicate, providing the latter would supply them at even quality at the lowest price, otherwise China could purchase where she liked. A commission of 5% was paid the Syndicate on all such purchases. In addition China secured the option of redeeming the entire loan at any time after ten years, the date of first amortization payment

In the construction of this Railway, and the operation of the Agreement, there is every evidence that complete harmony existed and the road was completed to the satisfaction of both parties. The Belgian Chief Engineer drew up the plans, specified the material, and the Director General approved and authorized the payments, and only Belgian or French products were purchased. It was a clear cut, out and out business

HIS EXCELLENCY CHOW CHANG-LING (C. L. CHOW),
FORMER DIRECTOR OF THE IMPERIAL RAILWAYS OF NORTH CHINA. EDUCATED IN AMERICA.

HIS EXCELLENCY CHUNG MUN YEW,
MANAGING DIRECTOR OF THE SHANGHAI-NANKING RAILWAY, A GRADUATE OF YALE UNIVERSITY AND FORMER SECRETARY OF LEGATION AT WASHINGTON AND CONSUL GENERAL AT MANILA.

proposition for the Belgians, for all they could secure from the loan, as the alleged political agents of France and Russia, was the market for their iron and steel. Aside from the rails purchased from the Chinese Hanyang Iron & Steel Works, their manufacturers derived the fullest returns from the undertaking. The provision of the Loan which gave the Chinese absolute control, and the privilege to redeem the property at the termination of ten years placed an effective check on any ambitious schemes to dominate the railway situation for Belgian firms.

When the time came, China exercised her rights and with a new loan redeemed the old one, bought out all the interests of the Belgians to a share in the profits of the line, replaced the Belgian officials with her own men, and is now controlling the property free from any restrictions or interference.

The Cheng-Tai Railway Loan Agreement which received preliminary approval in 1898 was not formally ratified until September 1902, and is known as the Chinese 5% 1902 Loan. Its nominal value was Francs 40,000,000, issued at 90%, for 25 years, with privilege of redemption. In this agreement the Administration of the Railway rested with the Company and all materials purchased abroad were to be procured from France or Russia. The construction was turned over to the Belgian Syndicate of the Peking-Hankow Line and the same rule applies as to the origin of material. Only French or Belgian materials are in use.

The next railway Loan also dealt with a Belgian Agreement for the construction of the Peinlo Line (Kaifengfu-Honanfu). This was signed at Shanghai in 1904 and provided for a loan of £1,000,000, issued at 90, bearing 5% interest, secured on the railways and guaranteed by the Imperial Government. It is redeemable in 20 years, but after 10 years, the date of first amortization, it can be refunded or converted. As for the engagement of the Chief Engineer and foreign staff, and the ordering and purchasing of materials, the same general rule as applied to the Peking-Hankow Line was adopted, and they were all furnished by French or Belgian manufacturers.

The Shanghai-Nanking Railway Loan Agreement of July 1903 for £3,250,000 was issued at 90, and bore interest at 5%, with the Railway and its revenues as first mortgage and guaranteed by the Imperial Government. The life of the Loan is 50 years, repayable at 102½ after 12½ years, and at par after 25 years. Under the provisions of this agreement the Engineer-in-Chief appointed by the British and Chinese Corporation had practical control over expenditures. The Corporation bound itself to build and equip the road as economically as possible in accordance with the best modern methods. The supervision of the road was entrusted to a Board of Commissioners of 5 members, three foreigners and 2 Chinese. One of the Chinese members was appointed by the Director General and the other in conformity with the wishes of the Provincial Viceroy. In addition to the Engineer-in-Chief, the Corpora-

HIS EXC. LIANG JU-HAO

EDUCATED IN AMERICA. FORMER MANAGING DIRECTOR OF THE IMPERIAL RAILWAYS OF NORTH CHINA

HIS EXCELLENCY LIANG CHEN-TUNG (SIR CHEN-TUNG LIANG)

RECENTLY RESIGNED FROM POST OF DIRECTOR-GENERAL OF THE CANTON-HANKOW RAILWAY TO PROCEED WITH H. I. H. PRINCE TSAI HSUN AS FIRST SECRETARY OF THE MISSION TO STUDY NAVAL AFFAIRS. EDUCATED IN AMERICA IN THE EARLY EIGHTIES. AS FIRST SECRETARY OF THE CHINESE EMBASSY TO QUEEN VICTORIA'S JUBILEE, THE HONOR OF KNIGHTHOOD (K. C. M. G.) WAS CONFERRED ON HIM. WAS ALSO FIRST SECRETARY TO PRINCE CHIN'S MISSION TO GERMANY IN 1901, AND SUBSEQUENTLY MINISTER TO THE UNITED STATES AND PERU.

tion appointed two British members. The functions of the Engineer-in-Chief were limited to the construction and operation of the line and the management of railway affairs.

The predominant influence of the British members on the Board, of which the Chief Engineer was the virtual head, naturally led to the adoption of any plans submitted by him, and the approval of any and all expenditures for material. There was only one logical outcome to such a situation.

The control of expenditure resting in the hands of the Engineer-in-Chief, it follows as a matter of course, that only favored British manufacturers were permitted to tender for supplies, and only British material was recommended and purchased. And as corollary to the above, and the desire to build and equip the road according to the best modern practice, only the most approved materials found their way into the make up of the road. And accordingly the road is as it should be, thoroughly first class in every respect, representing the best in British railway practice and standard throughout. It is undoubtedly the best built and best equipped road in China, and a standing object lesson of British railway principles adapted to Chinese requirements.

But the road has cost something like $55,000 gold per mile, exclusive of flotation charges and commissions, as against a cost of $40,000 gold per mile on the Imperial Railways of North China, and an estimated cost of less than $20,000 gold per mile for some roads built under purely Chinese supervision, such as the Kiangsu, Chekiang and Sunning Roads. This unusual divergence of costs has set the Chinese thinking. They allege extravagance and unnecessary expenditure on the part of the Engineer-in-Chief. The fine passenger cars, high grade locomotives, substantial freight houses and commodious stations are held up as too costly for such a short line China. They maintain that the great masses have no luxuries in their homes, and they don't require such things on their travels. They insinuate that the excessive expenditure was due to a desire to increase the size of the Loan, and add to the commission of 5% on all purchases for supplies. The Corporation thus placed in an unpleasant light answers that while the road has cost more than any other in China due to the superior quality of the construction and material, the total would have been greatly reduced had it not been for the many "combines" amongst the Chinese officials to raise local prices for land and ballast. The British side of the dispute is summed up in the following article to *The Times* from its Shanghai correspondent:

HIS EXCELLENCY SHIH SHAO-CHI (ALFRED SZE)
GRADUATE OF CORNELL UNIVERSITY 1902, FORMER DIRECTOR OF THE PEKING-HANKOW AND IMPERIAL RAILWAYS OF N. CHINA

H. E. TSAI SHAO-CHI,
EDUCATED IN AMERICA. FORMER DIRECTOR OF THE IMPERIAL RYS. OF N. CHINA

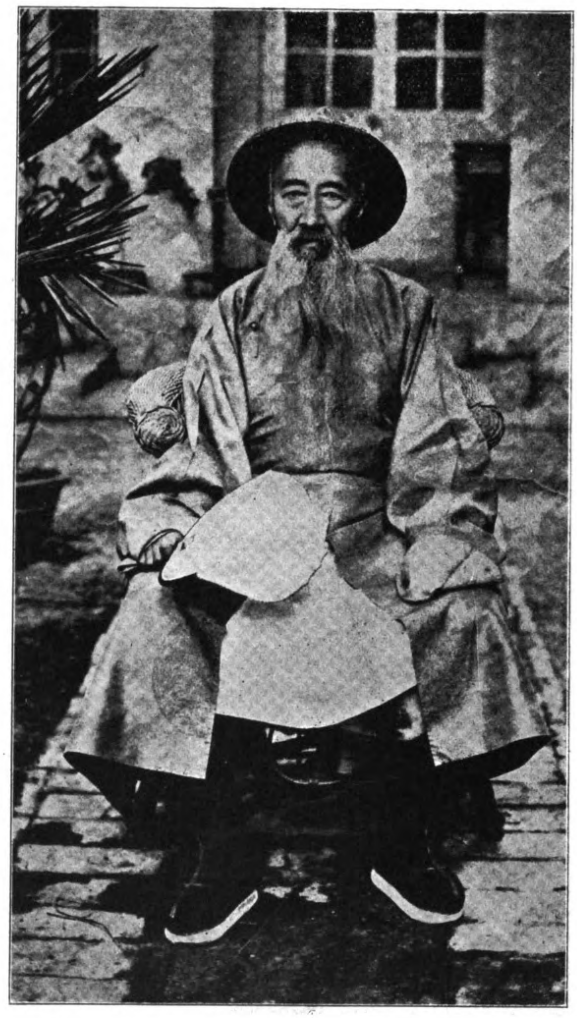
"By the terms of the contract Sheng Ta-jen received £250,000 in return for which he is bound to acquire all necessary land, and to obtain the removal of graves within the limits required by the railway. At the beginning of March, eighteen months after the arrival of the engineering staff, only 38 miles of the total length had been acquired, and this in isolated sections; but since then matters have advanced more rapidly. The construction of the first earthworks began in October, and now proceeds as the land is handed over; it is therefore evident that future progress will depend chiefly on Sheng's performance of his duties. He promised to give the company full possession of all the land as far as Soochow before April, and thence to Wusieh before June; but hitherto continuous pressure has not succeeded in securing the fulfilment of this official's promises. In the meanwhile it is interesting to observe that, so soon as the survey of any section is completed and the line definitely located, a Chinese syndicate—of which Sheng Ta-jen's son is the reputed head—purchases the land, wherever possible, from the agricultural owners and holds it against the railway company, claiming a large advance on the market value. (The price paid for agricultural land, compulsorily acquired, varies between £20 and £40 per acre.) These operations primarily

concern the Chinese Government; but, as they delay construction work and thus increase the ultimate cost of the railway, they concern also the concessionnaires to whom Sheng frequently appeals for more funds to meet 'unexpected contingencies.' At the Shanghai terminus, in particular, the necessary land has been so effectively 'cornered' and is held at such high prices that the position of the station may have yet to be altered, and in any case cannot be completed before the opening to Soochow takes place. The humorous side of the matter is thrown into relief when we remember that this is a Chinese Government Railway, and that Sheng and the Chinese Commissioners on the Board of Construction are ostensibly carrying out the work with economy and despatch.

"Another source of difficulty lies in the removal of graves. This is a question which presents itself everywhere in China; but in the country between Shanghai and Wusieh it is unusually prominent, because the line runs through what might be well described as a continuous graveyard. Tombs and family burying-grounds, frequently of great size, are scattered haphazard throughout the highly cultivated fields; many have been removed during the past year, but even on the land already handed over an enormous number remain, and for these gaps have to be left in the embankments. For each grave's removal compensation has to be paid at rates varying between 10s and £1; and as this business is also transacted by Sheng's staff, it presents a continual cause of friction and delay. So-called benevolent societies have been formed at various centres, and collect subscriptions with the ostensibly pious object of removing the remains of the numerous departed Chinese who left no descendants to practise for them the rites of filial piety. The Tai-ping rebellion left many such cases in its track. These societies employ coolies to collect the bones, which are then reverently placed in a Devoe's kerosene packing-case or other equally inexpensive receptacle, and thereafter deposited on the nearest piece of waste land, the society's work being confined to claiming and getting the compensation per set of bones collected. The smallest remains will suffice to justify a claim, and unidentified ancestors are therefor in demand all along the line. It is reported, though difficult to prove that the Chinese members of the Board of Commissioners and other local mandarins have been prominently connected with the 'benevolent' societies.

"Another interesting example of Chinese official methods came to light when the construction of bridges was begun. The corporation soon discovered that a completely organized 'corner' had been formed by the Chinese to control the supply of skilled labor and of bricks. So effective was this 'combine' that considerable time elapsed before work could be done at anything like reasonable prices; and one of the consulting engineers (Mr A. J. Barry) has therefore made arrangements for the establishment of independent brickyards and the importation of labor from Tientsin. In the meanwhile the construction of all bridges as far as Wusieh has been contracted for.

"A similar 'corner' was subsequently organized to command the supply of ballast: the native syndicate in this case has acquired control of all the existing quarries at Soochow, and even extended its operations in Ningpo. Popular report even credited the Chinese members of the Board of Commissioners with a benevolent interest in these corners. At an early stage of the local negotiations, after the signature of the final agreement, the Chinese claimed that no contracts for construction work should be made except through a native official who claimed the title of 'Director of Contracts.' The organization of 'corners' followed upon the collapse of this preposterous proposal."



THE LATE CHANG-CHIH-TUNG

LATE DIRECTOR GENERAL OF THE CANTON-HANKOW RAILWAY, AND LEADING SPIRIT IN THE RECENT LOAN FIGHT FOR RECOGNITION OF CHINA'S HONOR

H. E. LU HAI-HUAN,

EX-DIRECTOR GENERAL, TIENTSIN-PUKOW RAILWAY, ONE OF CHINA'S MOST HONORED AND UPRIGHT OFFICIALS, WHOSE CAREER HAS BEEN BLASTED OWING TO THE HUGE PECULATIONS OF HIS SUBORDINATE AT THE GERMAN END OF THE LINE

Of course if this report is true, the Chinese adopted a very bad foreign custom, and deserve severe censure. We have heard of many instances where the "inside clique" in foreign countries reputed to be highly enlightened have quietly cornered land needed for government, railroad or other public purposes. It seems hardly credible that the Chinese could know of such practice abroad, and leads us to believe that the correspondent simply fixed up an old Tammany Hall legend and inserted Chinese names to give it verisimilitude.

However, if true, it opens up a subtle question. In railway building in China is the foreign loan agent to reap all the profit, and none go to the native? A loan contract, which gives the foreigner the exclusive privilege to charge a commission on purchases, ought at least recognize the right of the Chinese to a little share of profit on his end of the deal. In this particular instance, all the profit went to the foreigner, who had control of expenditures, and the Chinese were barred from anything except on the sale of lands, brick and native labour. The foreigner's commissions on purchases amount to nearly Taels 500,000 or roughly £60,000 or 2% of the amount of the loan, and the clause which gives them this commission is looked on as a continual source of income during the life of the loan.

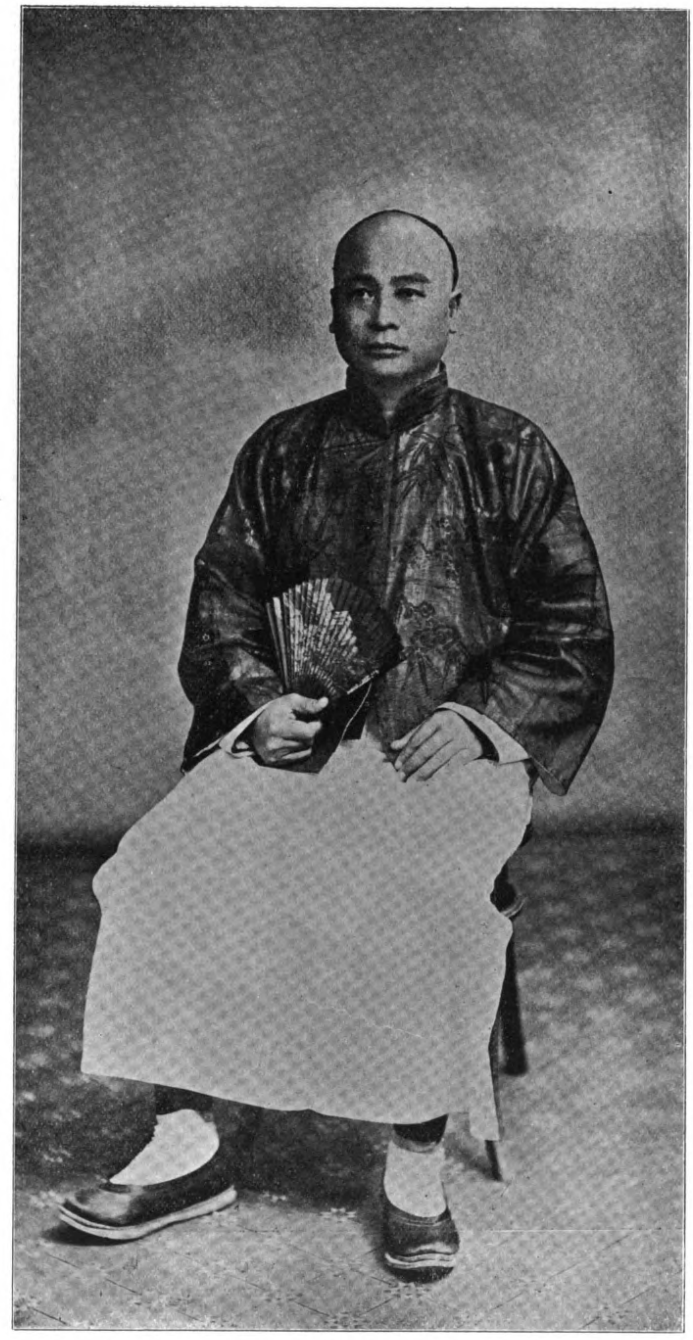
If the Chinese forced up the price of land, as the only means of securing their "official squeeze," and forfeited the good opinion of all right thinking people, what must be said of an arrangement which precluded open competition to all British manufacturers to a share in the supply of materials. If equal opportunity, and fair play had been granted to all British manufacturers of cars and locomotives instead of an approved list, it is contended that many thousands of pounds would have been saved in the cost of the road.

As the correspondent of the *Times* aptly remarks, there is a humorous side to the matter, but we heard no loud sound of merriment from the Chinese Government who had to foot the bills. They may turn the joke on us.

And from these two sides of the question the public is left to accept which view it likes best. The construction of the road has no great engineering difficulties to overcome, and the impression left on the mind, after hearing both sides of the dispute, is that $55,000, gold, per mile would permit of some excessive charges somewhere in the accounts. British interests stoutly maintain with a good show of reason that in complying with the stipulations of the Agreement they have given China a thoroughly first class road in every respect, built and equipped according to the most approved modern railway practice, with stations, road bed and rolling stock which will not require any repairs or alterations for a number of years, and naturally the cost is high, and China will in time learn to appreciate the expenditure.

Chinese opinion holds steadily to the point that under the existing impoverished condition of the Empire, and the political tendency of many railway loans forced on her in the last decade, such a great expenditure was unwarranted, and her purpose would have been served by a road costing half the amount.

But the one feature which the controversy has brought strongly into the lime light is the dangerous policy to China, of entrusting the control and expenditure of loan funds entirely to foreign supervision and control. Had the complexion of the Board of Commissioners been reversed, and the majority Chinese instead of British, the former maintain that the road would have been built for half the cost, and some strength is given their argument from the costs of other roads built solely under native control. Further strength is given their side of the argument from the prices quoted for rolling stock in the Report of the Engineer-in-Chief and a comparison with other prices at which similar goods have been laid down in China for other roads. Although the Loan Agreement calls for the flotation of £3,250,000 in bonds, only £2,900,000 have been issued and the Chinese Government prefers to furnish from the Treasury any



The Builder of the Kalgan Railway

the most difficult engineering task in China

HIS EXCELLENCY TAOTAI CHAN TIEN-YU, C. E., M. I. C. E., ETC.

GRADUATE OF YALE UNIVERSITY, MORE FAMILIARLY KNOWN UNDER THE CHINESE RENDERING OF HIS NICKNAME "JIMMY," GIVEN HIM AT YALE BY HIS FELLOW STUDENTS IN 1883, AND WHICH HE CONTINUES TO USE UNDER THE STYLE OF JEME TIEN-YU

necessary balance of funds for the completion of the road, rather than sanction the issue of the £350,000 balance through the Corporation.

The next loan of importance is the Canton-Kowloon, 5%, 1907, gold loan for £1,500,000, issued at 94. The duration of the Loan is 30 years, redeemable at 102½ after 12½ years, or at par after 25 years. The same general rules for the supply of material are followed as in the Shanghai-Nanking agreement, except that instead of the Corporation receiving 5% commission on all purchases this was commuted to a lump sum of £35,000 in full payment of all services rendered in the construction and equipment of the road. The Chinese profited from experience on the Shanghai-Nanking construction, where the Foreign Engineer had full control over expenditures, and in the present agreement they secured for the Chinese Director General participation in the supervision of the funds. Under the agreement, the Head Office was directed by a Chinese Managing Director (appointed by the Viceroy at Canton) with whom are associated a British Chief Engineer and a British Chief Accountant. The British employees were proposed and certified as competent for the posts by the Corporation, and they could only be dismissed by mutual agreement with the Viceroy. The accounts and expenditures were to be certified by the Accountant before payment by the Managing Director. Here although China secured an advantage in handling the expenditures, the British succeeded in placing their accountant as a check on any irregularities. This Agreement was considered by British opinion as the very best yet negotiated, and held up as a pattern for all future loans. Mr. Kent in hs book on "Railway Enterprise in China," in summing up the situation, laid stress on the soundness of such terms. But human judgment is liable to err, and the result of their working out has proved a boomerang to the advocates of foreign financial control. To the intense mortification of British interests, the much abused Chinese propensity for "squeeze" has been equalled by their own chosen and accredited custodian of the national honor. Late papers from Hongkong bring the story of the trial and conviction of the British Chief Accountant of the Canton Kowloon Railway on the charge of embezzlement of funds amounting to over $20,000.

We now come to the Imperial Chinese Government Five Per Cent Tientsin-Pukow Railway Loan, issued on the 13th day of January, 1908, through the Deutsche-Asiatische Bank (German) one half, and the Chinese Central Railways, Ltd., (British) one half, for the construction of the trunk line from Tientsin to the Yangtsze at Pukow. The term of the loan is 30 years, repayable after 10 years at 102½, and at par after 20 years. The price to the Chinese Government for the first flotation of £3,000,000 was 93, and the second the actual rate of issue to the public, less 5½ points commission to the Syndicate. The loan is secured on the likin and internal revenues of Chihli, Shantung, Nanking and Kiangsu, and guaranteed by the Imperial Government. China here made another step forward towards recognition of her rights in the control of funds and construction. The construction and control of the railway is entirely vested in the Imperial Chinese Government, in addition to the power to appoint qualified German and British Chief Engineers, acceptable to the Syndicate. These in turn were under the orders of the Chinese Managing Director. In the employment or dismissal of the technical employees of the line, the Director and Chief Engineer have to concur or submit the difference of opinion to the Head Director General for decision. China also secured the privilege of appointing a European Chief Engineer to administer the entire line after construction, without reference to the Syndicate.

The absolute control of the funds rested in the hands of the Chinese Director General and through him delegated to the Managing Directors of the two sections.

There was no provision for the services of a Foreign Accountant to certify payments as in the case of the other Loans. In fact the terms were the most favorable ever conceded to China, establishing the principle that she could be trusted to spend a foreign loan honestly. British opinion was loud in asserting that the terms were too liberal, as with no check on the accounts they failed to offer sufficient guarantee for the investor. Provision was made in the Agreement, however, that an Auditor paid by the Syndicate could inspect the accounts at stated intervals, but beyond this he had no power to interfere. The Germans, on the other hand, were as loud in their praise of the terms, taking unto themselves all the credit of conceding the square deal to China for the first time in the history of foreign railway loans. And so the negotiations terminated and went into effect. China could now show to the world that her officials were fully competent and trustworthy, and with a check on the possible extravagance of the Foreign Chief Engineer in ordering materials, the Managing Directors could keep down the cost, and prevent favoritism.

But here again the unexpected happened. The Chinese Managing Director of the Northern Section was married to a German lady, and had strong Teutonic tendencies and connections. Complete harmony existed from the outset between him and the German Chief Engineer, and the work of construction was pushed ahead rapidly.

Although solely in charge of the funds, and responsible for their proper accounting and expenditure, relations between him and the Engineer were such that he permitted the latter equal participation in the control of the Chief Accountant and his assistants. The contract of engagement signed by these employees recognized the Chief Engineer as equal in authority to the Managing Director, despite the stipulation of the loan, placing sole responsibility for the funds and their accounting in the hands of the latter. So here at the outset the superior official surrendered a part of his prerogatives to a subordinate without any of the responsibility. Affairs ran very smoothly and order after order for materials was placed in Germany,

(From left to right.) H. E. SHENG KUNG PAO, Vice-President Board of Communications; H. E. LI CHING FANG, Director of the Hu-Kuang Ry.; H. E. TSEN CHIN HSUAN, Ex-President of the Board of Communications; H. E. LU-HAI-HUAN, Ex-Director-General Tientsin-Pukow Ry.

Goods of other countries received little favor from the northern authorities. It is openly stated that only certain firms had any chances for the business of the road, and it is alleged that tenders for some of the material were publicly invited in Tientsin, after the goods had been ordered from Berlin and on the way to the East. The happy concordance between the Chinese Director and his German subordinate was held up as a model for the Southern Section to follow, where opposite conditions prevailed. But the blow came and shattered this ideal, "and all the King's horses and all the King's men cannot put the pieces together again."

Following the many charges of graft and corruption against the Chinese Managing Director—which are too numerous to specify—investigation disclosed the fact that Taotai Li had annexed unto himself and his confederates the insignificant sum of Taels, 3,500,000, or roughly speaking $2,400,000 gold, or one-fifth the entire portion of the German loan. China lost no time in dealing with the matter. Punishment was meted out to the impeached official, and all those implicated with him in the frauds. In his fall, he dragged down the Director General Lu Hai-huan although it is conceded that he has no share in the misdeed of his subordinates. Chinese law could not reach his alleged foreign accomplices, so the Imperial Government had to rest content in cleaning out and chastising its own wrongdoers. German interests have stoutly protested the innocence of the Chief Engineer and other German officials, and maintain they are entirely free from any suggestion of collusion, and in fact no formal charge has been presented against them. But the Chinese have been thinking, and wonder how the Chief Engineer, after arrogating to himself equal control over the accounts, failed to discover these enormous peculations, and to bring charges against his superior through the Bank, or why the German auditor overlooked the unmistakable discrepancies in the accounts. While the Chinese are willing to accept the stigma of criminal carelessness, they cannot free their minds from the idea that although the German officials may be scrupulously upright and incapable of acquiring ill gotten gains, they are open to censure, inasmuch as the Chief Engineer having equal supervision of the accounts must have exhibited the same culpable negligence in failing to detect the frauds. As it can be fully substantiated that the German Chief Engineer, contrary to the provisions of the Loan Agreement, enjoyed equal control over the Accounting Department, public opinion will side with the Chinese contention. The situation is one which calls for something more definite than a mere protestation of innocence from German interests, as under these conditions their national honor is as much at stake as the Chinese, who have so far meekly accepted the full burden of the disgrace. It is safe to say that cordial and harmonious relations between a Chinese managing director and a foreign engineer, which throws all the purchases into the hands of favored manufacturers of any one nation, will in the future receive more careful scrutiny at the outset by the Imperial authorities.

While this situation existed at the German end, affairs on the British section progressed along opposite lines. Here the Chinese Managing Director is a civil and railway engineer graduated from an American College in 1883. His knowledge of railway matters is almost as good as that of the British Chief Engineer under his orders. Instead of harmony, discord reigned in the camp. The British Engineer, despite the plain intention of the Loan Agreement and guided by the precedent on the German section, insisted that the Chief Accountant must recognize him as equal in authority with the Managing Director. And against the positive objections of the latter, to any interference in his domain, the Engineer created the issue, which was only settled by the authorities in Peking ruling against his pretension.

Aside from this friction, matters have progressed favorably. Work on the road has been retarded and China will have to pay a little more interest, but on the other hand she is securing such low prices for materials that the saving will greatly outweigh any small increase in interest due to a few months' delay. While the Chief Engineer invariably advocates the purchase of British materials, many tenders at lower prices have been awarded by the Managing Director to American and Continental firms, and Chinese industries have been favored whenever possible. The working out of the "Pukow terms" on the Southern Section has so far vindicated China's contention that her officials are fully competent and trustworthy to handle loan funds to the best advantage of the investor and her own interests. Never before in China have bridges and rolling stock been delivered so cheaply. The same general type of goods waggons sold to the Shanghai-Nanking Railway have been purchased by the Tientsin-Pukow Director for about half the price.

And now we come to the Shanghai-Hangchow-Ningpo 5% Gold Loan of 1907 for £1,500,000, issued through the British and Chinese Corporation. This is fully dealt with under the article on that road. The moral of this story is that some Chinese are unwilling to accept a foreign loan at any price, and stubbornly resist the efforts of the Central Government to force them into line. Here the Chinese have been willing to indemnify or present the foreign corporation with the amount of their commissions for purchasing supplies rather than permit them to interfere in their affairs. The result is that under their own supervision the Chekiang and Kiangsu Railways have been constructed and equipped according to their own reports at a cost of less than $20,000 gold per mile. The foreigner cries "graft," as the reason for the desire to handle their own money, but the low cost of the roads, practically prohibit any large amount of squeeze. Between $20,000 on the Kiangsu and Chekiang Railways and $40,000 on the I.R.N.C. or $55,000 on the Shanghai-Nanking Railway is a wide difference, and if the Directors have received "official commissions" they are not above a practice prevailing in some other countries. But the critics say the money was wasted, the bridges are unsafe, the road bed is sand, the sleepers are punk, the cars are miserable and the engines will only last a few years. The proof of the pudding is in the eating. The roads are there, trains are running, so far there have been no accidents, and the Chinese are congratulating themselves on outwitting the foreigner. Some of their rolling stock may be bad, but they got just what they ordered and paid for. On the other hand some of the cars are standard German, American and British make. The tracks may need ballasting and new sleepers required in due time. Profits are rolling in and they can afford to spend some in correcting errors. To those who unfavorably compare the trains in these roads with the Shanghai-Nanking, the Chinese answer, "it is good enough for us," and we have a margin of $35,000 gold per mile between us and the other road.

This brings to the proposed Hankow-Canton and Hankow-Szechuen Railway Loans, now awaiting signature at Peking. These roads are to be constructed under a joint loan from Great Britain, France, Germany and America, and Pukow terms will prevail.

In accordance with her promise China extended the first chance to supply this loan to a British Syndicate, but H. E. Chang Chih-tung, the Director-General of the Line, having the negotiations in charge, insisted that "PUKOW" terms should be stipulated in the Agreement. To this the agent of the Corporation refused to accede, and held out for "Kowloon" terms, with their reflection on Chinese honesty. The negotiations were terminated abruptly by H. E. Chang Chih-tung refusing to treat further with the Syndicate, or its representative. He then turned to the German Bankers who were only too willing to accept these terms. So the deal which let Germany into the Yangtsze valley was negotiated and signed. This great blow to British prestige in China is therefore the direct outcome of a loan agreement in which her representative refused to cede her a certificate of character and admit the honesty of her officials, and on this rock the British and Chinese Corporation finally came to grief, and destroyed its future activity in China. During the subsequent Loan negotiations in Peking, the Chinese flatly refused to deal with their representative; British interests in China had to be taken over by the Hongkong and Shanghai Bank, and Mr. J. O. P. Bland, after a life time of activity in the East, was compelled to retire from a field in which his usefulness was ended.

In the final drafting of the Agreement, which is still unsigned, the construction of a section of the Hankow-Szechuan Line was included. Great Britain, France, Germany and

America will participate equally in the £6,000,000 issue, and materials will be purchased in the cheapest market. The issue price is to be 95, and the terms in general are the most liberal ever conceded to China, and mark the final step to a full recognition of her rights in supervision of foreign loans.

From a careful study of nearly all Chinese Railway loans, it is apparent that foreign financial syndicates refuse to accept the theory that China can be trusted to honestly administer the proceeds of a loan, and therefore trusted agents must be selected to prevent her officials squandering the funds. It is seen that in some instances this theory has been amply vindicated and on others the reverse has obtained. On the I.R.N.C. under British technical and accounting supervision, the property has rapidly increased in value, though this was due to natural trade conditions rather than to any unusual activity on the part of the foreign chiefs of departments. Even with these checks on the accounts it has been impossible to completely prevent frauds, as several years ago it is asserted that corruption existed on a huge scale. And while the provisions of the loan have operated to the entire satisfaction of the foreign bondholders, they have at the same time constituted a direct menace to the legitimate aspirations of manufacturers other than favored British firms to an equal share in the Chinese railway market. British writers point to the administration and operation of the I.R.N.C. as the model for all other roads in China. Were it not for the danger to American and Continental railway principles involved and absence of fair play to all British manufacturers, this could be conceded, and as far as the operation of the road as a public carrier is concerned the system can be approved, but when the administration of such a road bound under the clause of a Loan Agreement to have a British Chief Engineer and assistants for 45 years enters into the manufacture of cars and bridges with British Standards predominating, for the avowed purpose of compelling their use on all other roads in the Empire, then the point must be stubbornly contested, as infringing on the doctrine of equal rights and the Open Door. No one can gainsay the right of the Chinese Government to impose such standards as it considers applicable to the requirements of the country, but in such a case, they should be drawn up by a body of broadminded men representing British, Continental and American practice, and not by a group of engineers of any one nation.

It has been proved that the theory underlying a loan agreement reflecting on the integrity of the Chinese officials, by providing for foreign supervision of accounts, does not always work out as expected, as instanced by the defalcation of the Accountant of the Canton-Kowloon Line. On the other hand the contention is strengthened by the enormous peculations of the Managing Director of the German section of the Tientsin-Pukow Line, carried on successfully under the eyes of the German Chief Engineer, who had equal participation in the control of the Accountant.

Absolute control of the construction funds in the hands of foreigners has not been acceptable to Chinese ideas of economy, as evidenced in the Shanghai-Nanking Railway dispute. Extravagance is charged on one side and jobbery on the other. It is a fact that ballast for the road had to be procured at high figures, owing to the combines amongst Chinese officials and gentry controlling the properties, and it is also fully substantiated that the prices paid for rolling stock was greatly in excess of what they should have been. This agreement worked out to the full satisfaction of the foreigner, but the experience will never be repeated by China.

It is also proven that under Chinese supervision of expenditures as instanced on the southern section of the Tientsin-Pukow Railways, honesty and strict economy have prevailed to the great advantage and profit of the Chinese Government, or rather not to the exclusive benefit of products emanating from the country furnishing the loan. It is also brought clearly into the limelight, that when untrammelled by loan agreements, or interference of foreign engineers, accountants and technical staff, and China permitted full liberty to supervise and construct her roads under native engineers and directors, the result is a revelation in economy which no foreign built road has ever attained. In the building of such roads as the Peking-Kalgan, Kiangsu, Chekiang, Pinghsiang and Sunning under purely native supervision and control, China has demonstrated to the world that she is fully competent to develop her transportation facilities at figures defying foreign competition. At a cost of $20,000 to $30,000 gold per mile, there is little scope for dishonesty. The roads may not be up to accepted foreign standards, but there are many new roads throughout the world of which the same may be said, and if China is satisfied and willing to construct a cheap road at first, and improve it as receipts increase, she will only be following a precedent set by successful pioneer railway builders in all other countries.

It is evident that every loan agreement carries with it a preferential clause for the purchase of materials manufactured in the country supplying the loan, and for a 5% commission to the syndicate acting as purchasing agent. Where the foreigner has full control of expenditures and where harmonious relations exist between the Chinese Director and the foreign Chief Engineer, it follows that competition will be restricted and favored firms patronized, to the disadvantage of other manufacturers of the same nationality, not to mention the complete freezing out of any other foreign makers.

It may be deduced from the above that the only opportunity manufacturers of all nations have of competing on equal terms and conditions, is where China has absolute control of expenditures, as on the Tientsin-Pukow or Peking-Kalgan Line, or where the roads are built by private capital. All concession or loan roads are so many direct bids for a monopoly of trade to favored firms of the nation supplying the funds.

At present British, German, American and Belgian materials predominate on roads constructed under their loans. Their engineers advise purchases on the principle that the worst maker of their own country is better than the best in any other.

A rough idea of comparative costs for railways in China, built under foreign loan agreements is here given

RAILWAYS BUILT UNDER THE RESTRICTIONS OF LOAN AGREEMENTS.

Railway.	Miles.	Loan.	Cost per mile U.S.C.	
Imp. Rys. of N. China.....	600	£2,300,000		
Imp. Rys. of N. China (Ch. Gov't shares).....	600	2,275,000		
Total.....		£4,575,000	£ 7,625	$41,800
Peking-Hankow Ry.....	760	£4,500,000		
Ch. Gov't assets.....	....	1,790,000		
Total.....		£6,290,000	£ 8,276	$41,380
Shanghai Nanking Ry.....	203	£2,900,000		
Ch. Gov't advances.....	....	221,373		
Total.....		£3,121,373	£15,376	$76,880
(1) Canton Hankow.....	30	*£ 500,000	£16,666	$83,336
(Samshui Branch) Total amount of loan.....	30	1,100,000	36,666	183,333 actual cost.
(2) Tao-Ching Ry.....	*90	700,000	6,666	33,333
Cheng-tai Ry. (meter gauge)	160	1,600,000	10,000	50,000
Peinlo Ry.....	140	1,000,000	7,142	35,710
Canton - Kowloon (under construction).....	90	1,500,000	16,666	83,333
Tientsin-Pukow.....	600	5,000,000	8,666	43,333
	2683	24,385,373	9,000	45,000

(1) * This figure is arrived at as follows: In the cancellation of the concession of the $6,500,000 paid to the American China Development Co. $3,000,000 represented the amount expended on the 30 miles of finished road, and 50 miles of earthwork. Allowing $10,000 per mile for this latter item, or $500,000, it leaves $2,500,000 as the cost of the 30 miles. As in this have been included a large percentage of preliminary and other expenses which would have been proportioned to the entire line when completed, the amount arrived at of £16,666 per mile is undoubtedly much higher than it would have been if the road had been completed under the original concession.

(2) *This is not really a loan-built road, but comes under the following heading. The loan was contracted after its completion by the Peking Syndicate.

RAILWAYS BUILT UNDER FOREIGN MANAGEMENT AND USING THEIR OWN FUNDS

Railway.	Miles.	Cost.	Cost per mile.	U.S.C.
Ch. Eastern Ry., Russian...	1600	$150,000,000 estimated.		$90,000
Shantung Rd., German.....	245	£2,664,600	£9,200	46,000
Yunnan Ry., (meter), Fr...	535	$32,216,000		60,000
Peking Syndicate, British...	90	£614,600	£6,828	34,140
(1) Kowloon-Canton, British.	22	*$13,000,000 Mex.	$600,000 Mex.	250,000
South Manchuria System, (Jap).....	714	Estimated over $100,000,000 capital.		140,000

(1) * Of this estimate over $3,000,000 went on the Beacon Hill Tunnel. The road has between 8,000-9,000 ft. of tunnels and large reclamation. The Kalgan Road had over 5,400 ft. of tunnels, and some heavy cuts and fills, and was completed for $40,000 per mile. The comparison is merely made to show the great divergence of costs between the two most difficult roads in China.

RAILWAYS BUILT WITH CHINESE CAPITAL WITHOUT FOREIGN RESTRICTION.

				U. S. Cy.
Pinghsiang	70	Tls. 3,600,000 exp.	Tls. 51,428	$32,000
Kiangsu	36	$3,000,000 cap.	$83,333	34,000
Chekiang	78	5,000,000 cap.	64,100	26,000
Swatow-Chaochow	24	2,000,000 cap.	83,333	34,000
Peking-Kalgan	122	Tls. 8,000,000 exp.	Tls. 65,570	41,000
Sunning Ry	..	.....	.....	.....
Tsitsinar Light Ry	18	250,000 exp.	13,888	8,676
Nanking City Ry	8	300,000 exp.	37,500	24,187

The actual amount expended is not obtainable though native reports are to the effect that all these roads have been built for less than $20,100 per mile and a balance was left in the Treasury.

The average cost of the Loan Built Roads will be considerably reduced, by deducting the large sum for the repurchase of the Canton-Hankow Concession from America, for which only 30 miles of road is allowed, but on the other hand there was some 50 miles of finished earthwork and grading included in this, as well as indemnity for loss of profits. To this should be added the financial losses on floating the loans, averaging 10 per cent, which would bring the construction cost of the roads down to a lower figure and make the general average about £8,000 per mile against say £6,000 per mile under Chinese direction. Complete and accurate data is lacking to make an exact table or estimate, and the figures given here vary considerably with actual expenditures; for instance, the Chekiang, Kiangsu and Swatow railway officials claim to have built their lines for under £4,000 per mile, but in default of actual figures, we have had to take their paid up capital as a guide.

It appears that the most costly loan built railway is the Shanghai-Nanking Road at an average cost of £15,000 per mile. (Revised figures give a final total for construction of £10,600.) The most economical of the foreign built roads is the Peinlo Line and then the Peking-Hankow Line which included the most important engineering feat in China—the bridging of the Yellow River. Between the two roads there is an actual difference of say £7,000 in favor of the Belgians but there is no comparison in the quality of the work. The American built Samshui branch of the Canton-Hankow line of 30 miles was the most costly to China, as the price includes the amount of the Loan for the purchase of the concession from the America-China Development Co. The actual cost of construction, however, was large, as alleged extravagance prevailed in the ordering of materials, and in prices paid. Naturally everything was purchased from America. The cost of this line to China, if carried to a finish at the pace set in the early days of construction, would probably have equalled the Shanghai-Nanking road, so Americans can not hope to stand on a pedestal and lay claim to any superior virtues. The point which the above table makes clear is that the cost of her 2,680 miles of foreign constructed roads including cost of loan flotations averages over £9,000 or $45,000.00 gold per mile.

The most difficult engineering railway proposition in China is undoubtedly the 122 mile road from Peking to Kalgan, where over a mile of tunnels have been pierced, and much difficult mountain bridge work and rock cuttings negotiated. The engines for the mountain section are the heaviest and most powerful in China. Yet with these high initial costs and charges the road has been completed for about Taels 8,000,000, or $41,000 per mile, or about the same as the Pekin-Hankow or I.R.N.C. The mountainous country through which the Ching-Tai railway passes is the nearest approach to conditions on the Kalgan Road. Yet we find that the Belgian engineers laboring under less difficult conditions, constructing a meter instead of a standard gauge road, expended £10,000 or $9,000 more than the standard gauge Kalgan road. It cannot be urged that the rolling stock on the Kalgan road is inferior, or the roadbed is poor. The cars have been largely supplied from the Tongshan Shops and the locomotives are Mallet type from the North British Locomotive Co., and Shay Geared engines from the Lima Locomotive Co. in addition to engines loaned from the I.R.N.C. The roadbed is rock, and well ballasted. And away below the Kalgan expenditures are the costs per mile of the Chinese built and much criticized Kiangsu, Chekiang, Sunning and Swatow lines, averaging about £6,000 or $30,000 gold per mile, but according to their own version less than $20,000 per mile.

The German-built Shantung line, 245 miles in length, cost, including interest on capital, £2,644,600 or about £9,200 ($46,000 gold) per mile. There were no steep grades or engineering problems to overcome, and in a general way the character of the country traversed is similar to portions of the Shanghai-Nanking Road.

These figures speak for themselves. They tell the story that China is forced to expend much more for her foreign built roads under the restricting terms of Loan Agreements than she would if left untrammelled in the supervision and control of expenditures. And they tell us that even after a capital expenditure of £24,000,000 ($120,000,000, gold), at the best, China has only a variegated assortment of railway cars and locomotives from every manufacturing country in the world, for some of which she has paid exaggerated prices, and many are entirely unsuited to the requirements of the traffic and must soon find their way to the scrap pile. And when the various systems are completed and joined together, there will be such a gathering together of ill-assorted and miscellaneous types of rolling stock, that interchange of cars and through freight or passenger service will be impossible, and in the end China will find herself compelled to purchase new material according to some definite standard, and relegate the old collection to purely local service on the various lines.

China is a poor man's country. All expensive and luxurious railway cars and other high grade material must be paid for by taxing the impoverished masses. China is heavily in debt and struggling hard to meet her foreign obligations and develop her transportation facilities while preserving her sovereign rights intact. Chinese officialdom may be corrupt, but it is not alone in this respect. There is not a so-called civilized nation in the world that has escaped similar charges in recent years, and for every instance of corruption in China, a counterpart can be found in other countries. The only difference is that "squeeze" is considered a legitimate perquisite in China and openly practiced by all classes. Like morality in general, it is a question of geography. In Europe and America, "squeeze," graft, corruption, malfeasance, and other similar methods of acquiring wealth, is frowned down and punished, but it is practiced just the same. China has proven to the world in her railway building that her official ideas of "squeeze" are moderate, and with all these perquisites added in, she can build roads to her own satisfaction, for nearly one-half the cost charged by foreigners.

China needs many miles of new railway which must be built for commercial and state reasons. China must borrow this money abroad as her people refuse to take up loans bearing 5% when they can make greater returns in other ways. China has demonstrated that her officials average up as honest and capable as foreigners, and all so-called checks on her control of loan funds are superfluous and an insult to her pride and standing as a nation. The security on the property, guaranteed by the Imperial Chinese Government or provincial revenues should fully insure the investor, as it does in any other country of the world. Why then should China be compelled by foreign financiers supported by their Governments to continue a system which makes her spend twice as much for her railways, and retards her progress by increasing her debts?

The major items of railway costs are lands and general labor charges, earthwork, crossings and fences, culverts, stations, administration expenses, etc., and rails, rolling stock and materials are secondary. Why perpetuate a system humiliating to a nation's pride, and doubling the entire cost of a railway for the sake of the profits on materials? By conceding to China the standing enjoyed by any little second or third rate power in other parts of the world, and accepting the Imperial Guarantee of the interest and principal, and permitting her a free hand in the construction of the roads and purchase of materials in the cheapest market, China would be able to build twice as many roads than she can under present loan conditions.

It is axiomatic that if the average cost of roads built under the strictures of foreign loan agreements, is $45,000

gold per mile, of which sum at least two-thirds are for labor, land, and supplies purchased in the country and only one-third goes abroad for materials, and serviceable railways can be constructed and equipped for $20,000 to $30,000 gold per mile when built without foreign interference, China could more than double her railway building, if unmolested in the administration of her affairs. The banking corporations would lose the 5% commissions on purchasing materials and a few high salaried employees would be eliminated. The same amount of money would be expended in the country, but the orders to foreign manufacturers for cars, locomotives and railway supplies would be doubled. What the banker, purchasing agent, and staff employees would lose would be repaid to the foreign manufacturer ten times over and in the end bring just as much profit to the banks, as though they held out for the continuance of a system in which they are at present the greatest beneficiaries.

China's credit is good. Her finances need reorganizing and it will come in time. Even under foreign financial control of all revenues her credit would be strengthened. Despite pessimistic reports of China's unstable currency and financial chaos, her bonds are eagerly accepted by the investing public at par or at a premium. This denotes a confidence in the Imperial Government guarantee, equal to that extended to other first class powers. Sooner or later reflections on her integrity through foreign interference in the expenditure of loan funds must cease. The sooner the better. If international protestations of friendship to China are sincere, and there exists a genuine desire to maintain the Open Door and further foreign trade relations, every country should subscribe to the doctrine of permitting China exclusive control of her Loan Funds for Railway purposes.

The benefits accruing to all interests are self evident, and only political objections can be raised against it. It is time China is accorded FAIR PLAY.

MEMORIAL OF H. E. TSEN CHUN-HSUAN ON RAILWAY SYSTEMS FOR THE EMPIRE

His Excellency Tsen-Chun-hsuan is a son of the late Viceroy Tsen Yu-ying and one of China's most energetic and progressive officials. He enjoys the reputation of being one of the most honest and efficient provincial rulers of the last decade. His official career began in 1892 as Sub-director of the Court of Imperial Entertainments and Director of the Imperial Stud in 1893. Appointed to in 1898 as Treasurer of Kuangtung, he rose rapidly to the Governorship of Shensi in 1900 and of Shansi in March, 1901. He was honored with the Yellow Riding Jacket in June, 1902, and transferred as Governor of Kuantung, where he put down a rebellion that threatened to assume serious proportions. From here he was made Acting Viceroy of Szechuan in September 1903, and transferred to a similar post at Canton in Nov., 1903. He was later appointed Viceroy of the Yun Kuei which he did not accept nor the subsequent honor of the appointment of Viceroy of Szechuan. For a short time in May, 1907, he held the post of President of the Board of Communications, but was immediately ordered to the Viceroyalty of the Liang Kwong. His resignation was submitted in August, 1907, and retirement into private life has taken an official from the councils of the Empire who can ill be spared. His memorial on railways is one of the best submitted, and shows a knowledge of the wants of his country far in advance of what is commonly conceded to Chinese officials by foreign critics.

Tsen Chun-hsuan has memorialized the Throne suggesting the advisability of having China's railways under proper unified control with a proper system. The Board of Communications, after having perused the memorial, by Imperial order sent in its views to the Throne. The views are divided into three sections. One.—Centre of all the railway systems in China. Two.—Four Trunk Lines. Three.—Branch lines.

I.—Centre of the railway systems in China.—It is stated that since the Tientsin Shanhaikuan Railway, the Railway carrying the mining products of Kaiping Coal Mines and Peking Hankow line are the only lines of importance at present and that Hankow should be made the centre of all the railway systems in China. Such is the majority of opinions expressed by people who talk about the railway administration of China. There are others who maintain that Hsiangfu is the best place for such a centre. From political geography these views are not to be adopted. The place which is the capital of the sovereign of the state should be the centre of the systems. In ancient times the centre of traffic was always at the centre where tribute was sent from the east, west and south and Peking should undoubtedly in any case be the centre of the railway systems of China.

II.—Four Trunk Lines.—What we call four trunk lines are—

1.—Southern.—When the Peking-Hankow Railway connects with the proposed line between Hankow and Canton, when it is completed, it will be made the Southern Trunk line by connecting Wuchang and Hankow by ferry boat.

2.—Northern.—The line to the North is one between Peking and Kalgan and regarding the proposed Mongolian Railway made by Prince Su the Board has already mentioned that the Peking-Kalgan line should be extended to Kulun (Urga) and then to Kiachta and this line will become the northern trunk line

3.—Eastern.—The line to the East between Tientsin to Hsinmintung together with the line between Hsinmingtung and Mukden which has been restored from Japan. Regarding the proposed line of the Hehlungkiang province made by Cheng Teh-chuan, the governor of that province, the Board of Communications has stated that the line should be extended to Aigun via Chiaonan, Tsitsihar. When this line is completed this may be made the Eastern Trunk line.

4.—Western.—The line between Chengting and Tayuen will be joined with the Tungpu Railway and then it will further be extended to the west with the line between Tungkuan and Lanchow as proposed by the ex-Governor of Shensi Tsao Hung-hsun and thence to Ili. When this is completed this may be made the Western Trunk line.

III.—Branch lines.—The branch lines of the Southern Trunk line.

1. Peking to Chengchow and thence from Kaifengfu, Honan, to Anhwei.
2. From Hsinyangchow to Kiangsu via Kiangpu.
3. From Hankow to Hsianfu.
4. From Wuchang to Kiangsi.
5. From Hunan to Kueichow.
6. From Canton there will be four branch lines.
   a. Canton-Kowloon.
   b. Canton-Macao.
   c. Huichow-Chaochowfu-Amoy.
   d. Wuchow-Kueilin.

All the lines in Honan, Anhwei, Kiangsu, Chekiang, Kiangsi, Fukien, Hupeh, Hunan, Shantung, Kueichow, Kuangsi and Kuangtung will be included in these branch lines.

2. Branch lines for the Northern Trunk lines.

When the line reaches Kalgan from Peking, as Cheng Hsun, the Lieutenant Military Governor of Chahar, has pointed out, there should be two branch lines, namely one to Jehol towards the east to connect Kalgan with that place and another to Suiyuan (Kukukoti) towards the West to connect the same with Kalgan and when the line reaches Kulun or Urga it will again be divided into two branches namely to Outer and Inner Mongolia. All the lines in Mongolia and Jehol will be included in the branch lines of the Northern Trunk line.

3. Branch lines for the Eastern Trunk Line. At Tientsin.—Tientsin Chinkiang Railway via Kiaochow and Tsinanfu. At Kaopangtse—a line between Yingkow and Port Arthur.

At Moukden the line runs towards the east to join the Russian Manchurian Railway. The lines in Shantung, Moukden, Kirin and Hehlungkiang are to be included under this trunk line.

4. Branch lines for the Western Trunk line. At Taiyuan a line to Tatung to connect with the Kalgan Suiyuan line. At Ping yang a line to Tsechow to connect with the Tsechow Taokao line. At Tungkuan a line to Loyang to connect with the Loyang Honan Railway. At Hsian a line to the North West via Pinglin to Ninghsia, another to the South West via Hanchung to Chengtu which will join the Szechuan Hankow Railway on the east and the Yunnan Szechuan Railway on the South and thence to the Yunnan-Annam and the Yunnan-Burma lines. On the West at Lanchow lines to Tsingkai (Kokonor) and Thibet will be built as branch lines. The lines in Shansi, Shensi, Kansu, Hsinchiang, Szechuan, Yunnan, Tsinghai and Thibet will be included under this Trunk line.

The order of building these lines should be arranged by considering both military and commercial convenience. On the northwest it is necessary to connect with the borders for the benefit of military purposes and also to connect with the sea coast on the south east for the convenience of commercial purposes. If provincial governments should be established for Mongolia and Thibet it will become very important to build lines to Urga and Thibet urgently and leave Tsinghai and Jehol as secondary. For the purpose of trade development on land and sea the Hankow-Canton line is the most important to be speedily completed and the Szechuan-Hankow and Yunnan-Szechuan will be placed as secondary. Recently the railway affairs in Kiangsu, Anhwei, Kiangsi and Fukien are mostly dealt with by the local natives by raising funds themselves. In Yunnan, Kueichow, Shansi and Shensi Viceroys and Governors are earnestly planning railway affairs but owing to the lack of funds they are not much facilitated. It is necessary to build railways for trade with the profit of which military lines should be built. In the north east it is easy to raise funds from the natives but in the north west it is necessary to raise foreign loans. The Board of Communications is now collecting the plans of railways from all the provinces and compiling one complete map showing all the complicated lines in one. When the affairs of the Board will be in proper working order deputies with engineers will be appointed to complete this map with a record of the circumstances and then the order of building will be properly decided. When such plans and maps are completed they will be duly sent to provinces to enable them to report on the progress.

THE FAR EASTERN REVIEW

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THE FAKUMEN RAILWAY

Probably no railway in China has received so much publicity as the projected extension of the Imperial Railways of North China, northwards to Fakumen. This matter has been presented at various times by the FAR EASTERN REVIEW, and the article published in the May, 1909, issue, fully explained the situation. In the light of subsequent events and information the facts therein presented have been fully substantiated, and upheld by other impartial writers. The following extracts from this article are given here:

"The Treaty of Portsmouth bound the signatory Powers 'not to obstruct any general measures, common to all countries, which China may take for the development of commerce and industry in Manchuria,' but Japan subsequently secured from China, in a secret Protocol to the Peking Agreement of 1905, the promise 'not to construct, prior to the recovery (by China) of the (South Manchuria) Railway, any line in the neighborhood of, and parallel to, that Railway, or any branch line which might be detrimental to the interests of the South Manchuria Railway.'

"China's rights, which were thus amply protected by the Portsmouth Treaty, were again placed in jeopardy by her own diplomats in the later agreement with Japan. With all her bitter experiences to guide her, and confiding her interests in the hands of her most experienced officials, China blindly bound herself to another surrender of rights, and paved the way for future troubles.

"One of her most skilled and astute diplomats, Tang Shao Yi, a Columbia graduate, attended the conferences with the Japanese Plenipotentiaries, leading up to the final signing of the Agreement with its secret protocol, and he was therefore in full possession of all the facts and conversant with all the points at issue. There appears to be no doubt that the full significance of this secret clause was appreciated by China, for it is part of the records of the discussions that its bearing on future railway construction in Manchuria was carefully considered. It is also recorded in the published reports of the American State Department that, when questioned by the American Minister at Peking about this self denying clause, Tang Shao Yi categorically denied its existence. Tang was subsequently appointed Governor of Mukden on the organization of Manchuria into a vice-royalty, and shortly afterwards initiated the secret negotiations which terminated in the signing of the agreement with Lord French for the construction of the Fakumen extension of the Imperial Railways of North China, and with J. O. P. Bland acting for the British and Chinese Corporation for the loan. This work was therefore carefully planned and entered into on the initiative of one of the high Chinese officials thoroughly familiar with the stipulations of the secret clause, and the storm that would be provoked by an attempt to prove its practical application to the situation in Manchuria.

"The singular fact inferred from this action on the part of H. E. Tang Shao Yi, which was a complete reversal of policy on the part of China, compels the belief that the step was taken with the express design of forcing Japan's hand and testing the strength of the Peking Agreement, for as the clause was secret, Japan would necessarily have to make its provisions public, in the event of any infraction of the terms on the part of China.

"For some years past China has endeavored to recover some of the rights signed away by former inexperienced officials, and especially to regain control of her railways, and as far as possible construct future roads with her own capital. The Imperial Railways of North China, as its title indicates, is an enterprise controlled by the Imperial Chinese Government, with a British engineer in chief, imposed by the loan agreement of 1899. It is one of the most profitable railway enterprises in the world. The line is 600 miles long, and represents a total capital investment of $49,394,426 (Mexican), of which amount $27,600,000 (£2,500,000) was secured as a loan from British capitalists in 1899 at 5 per cent interest. The balance of the capital, $21,994,428, is held by the Imperial Chinese Government and native shareholders. The ratio of expenses to earnings in 1906 was 28 per cent, in 1907, 37 per cent, in 1908, 28 per cent. The receipts last year were $11,067,677, and expenses $3,075,567, leaving a credit balance of $7,992,110, which, added to the credit balance carried forward from the previous year of $6,658,763, made a total of $14,650,875 for expenditure. After paying the fourth installment on the loan and interest, Chinese shareholders and other general expenses, and applying $3,839,288 towards the construction of the Peking-Kalgan Railway, there was still a credit balance of $6,296,215. In fact the surplus profits of this line are not only sufficient to carry on the construction of the Kalgan railway, but have also been pledged to guarantee the interest on other railway loans.

"Here is a road which not only provides for all its own improvements, branches, and all charges, but is actually building another 200 mile road, and also the rolling stock for various native roads in its car shops, and guaranteeing the interest on loans to construct others, all under Chinese supervision and free from foreign interference. The actual expenditure on capital account for the existing 600 miles of road is a little over $80,000 Mexican per mile, and at this high rate an extension of 50 miles costing $4,000,000 could readily be undertaken out of the present credit balance of the road, especially as the work would take two years to complete, and the expenditure spread out accordingly. Yet, despite the existing bitter opposition to unnecessary foreign loans, and the undoubted financial and engineering ability of the Imperial Railways of North China to carry on the work under its own supervision, it was considered necessary to build this little insignificant 50-mile extension to reverse the policy of the country and resort to a foreign loan, placed in Great Britain, and its construction contracted for by a British company.

"There is only one interpretation to this enigma. China, in her defenseless condition, could not successfully disregard Japan's opposition to the secret clause, and so adroitly laid her plans to secure powerful foreign assistance to carry her point, and ascertain Japan's interpretation of its meaning, and her future intentions. As British capital was already interested in the loan of the I. R. N. C. it was hoped that this fact in addition to the influence of the alliance would result in Japan consenting to the execution of the contract.

"The remarkable cleverness and diplomacy of Tang Shao Yi in enlisting this aid, by contracting with Lord French for the construction of the road, and with the British and Chinese Corporation for the loan, before Japan learned of his intentions, is only surpassed by the blind acquiescence in the scheme by the general public, and the acceptance of China's side of the dispute, because British interests were involved. British and American diplomats have also been adroitly led to report favorably on China's rights in the dispute, and the press generally has followed the same course.

"The refusal of the British Government to interpret Japan's attitude as threatening the doctrine of equal opportunities, and interfering with China's development has perplexed the leading British organs interested in Chinese affairs. To the disinterested observer, however, this position seems entirely consistent and comprehensible. In addition to a suspicion that the Fakumen scheme was "a put up job" to discredit Japan, China has permitted the world to gain an insight into her future intentions to prolong the railway northwards to Tsitsihar and thence on to Aigun, with a branch to Kwang-cheng-tse to connect with the Kirin Road. While Japan might generously waive her interpretation of the secret protocol and permit the extension to Fakumen, without it resulting in any material damage to the interests of the South Manchuria Railway, she would naturally view with deep concern the establishment of a principle which would ultimately menace her present strategic and commercial advantage in Manchuria. So it is quite con-

ceivable that the fair-minded, conservative statesmen at the head of affairs in London would extend their moral support to Japan in this question, and cement the alliance for powerful political reasons, rather than be made the instrument of Chinese political intrigues, or be guided by an appeal to protect a contract which was so evidently negotiated by China, for the set purpose of creating discord in the harmonious relations existing between the Allies.

"China has proposed to submit this matter along with other issues to the Hague for settlement, but Japan has refused on the grounds that it can be settled out of court through regular diplomatic channels. This would indicate that Japan is willing to compromise and permit the extension to Fakumen at least. China's rights to develop her own territory are indisputable, but in this instance China has again hampered her liberty of action by signing ambiguous agreements. The wording of the document leaves its construction open to argument, and until a compromise is effected on the definite meaning of 'in the neighborhood of, or parallel to, and branches detrimental to the Japanese road,' both sides can place a wide construction on their meaning. The best friends of China must acknowledge that she has entered the agreement with her eyes open, and fully realizing the evils that could arise from a selfish interpretation of this self denying clause. The censure if any is not applicable to Japan, but to the high Chinese officials who, having past experiences in mind, allowed themselves to set their seal to such an agreement."

In addition to the Fakumen Railway question, the Antung-Mukden reconstruction and other important issues had been on the board for a long while without any serious attempt being made by either side to settle outstanding differences and get down to an amicable adjustment and working arrangement. The Chinese were, to all appearances, intentionally delaying and postponing settlement, after Japan's refusal to submit their differences to the Hague. A change of Viceroys in Manchuria at the most critical stage of the negotiations only helped to complicate and finally bring matters to a crisis. It was easy to ferosee the end of the trouble. Any one not blinded by prejudice could foresee the humiliation awaiting China in the event of a prolongation of the situation.

The issues at stake in Manchuria were of such vital importance to China, that unusual tact and diplomacy were necessary to avert disaster. No people in the world are more sensitive than the Chinese or Japanese, and any reflection on their honor is taken keenly to heart. Yet we find that in addition to the dilatory tactics of the new viceroy of Manchuria the Chinese native and foreign subsidized organs were carrying on a persistent nagging and insulting attack on Japan and her people. Human nature is much the same the world over, and newspapers are very quick to reflect public or official opinions. If *The London Times*, with its reputation as the official mouthpiece of Great Britain, was to descend into vituperative and insulting language against Germany, it is not difficult to prophesy the result. Public opinion in America was probably more incensed against Spain by the reproduction of the scurrilous and indecent remarks of the irresponsible Spanish press than by the actual situation in Cuba.

And when a foreign paper published in Shanghai, as the acknowledged organ of the Chinese authorities, follows the same insulting line of attack on Japan, the result is the same. China has yet to learn the following quotation from Lecky's "England in the 18th Century."

"Most modern wars may be ultimately traced to national antipathies which have been largely created by newspaper invectives and by the gross partiality of newspaper representatives."

Irresponsible newspaper writers on both sides brought about the Spanish-American war, and a conflict between America and Japan has only been averted through the strong common sense of the leading men of both nations. Yet Chinese officials blindly support a foreign paper whose professed policy is to hold Japan up to the scorn of other nations, and to generally create discord amongst all others. When China permits her official documents to be first published to the world through the medium of a paper, whose existence is an insult to Japan, she has only herself to thank for the bitter animosity created. When later on she has so wounded the pride of Japan through the insults of her paid organs and the inevitable happens, then, and then only will China learn her lesson. But it will be too late.

If China has been deeply wounded in her pride, and humiliated before the world by her aggressive neighbor, she can extend a large share of her thanks to the efforts of a paper, whose insulting policy towards Japan has brought about its inevitable return. And when in the future if such a policy is persisted in, China alienates the friendship and good will of many of her best friends, she can still thank the insulting efforts of an official paper who charges mercenary motives to all those who may disagree with its ululations.

The Fakumen question has been relegated to a back seat. The Antung-Mukden crisis brought about a speedy adjustment of all outstanding differences between China and Japan. The recent Manchurian Convention between the two countries settled the long drawn out Fakumen Railway dispute as follows:

ARTICLE I (MANCHURIA).

"The Government of China engages that in the event of its undertaking to construct a railway between Hsinmintun and Fakumen, it shall arrange previously with the Government of Japan."

This agreement, however, is only a temporary settlement of the question, and it is bound to be reopened in another form.

CHEFOO-WEI-HSIEN-RAILWAY

(Chefoo Chining Railway Co., Ltd.)

A railway project which has been on the boards for the last three years is the construction of a road from the port of Chefoo, on the northern coast of Shantung Province, to the inland town of Weishien on the German Shantung Railway. The building of this latter road has diverted the trade to Tsingtau, which formerly found an exit in the treaty port of Chefoo, and the native merchants and Chinese officials naturally view with deep concern the growth of the exclusive German trade port and the decline of Chefoo. The situation in Shantung is almost identical in some respects as in Manchuria, where the Japanese port of Dalny is being built up by the railway company, and the treaty port of Newchwang is steadily losing ground. Formerly Newchwang on the north was the natural outlet for Manchuria, and Chefoo held the trade of Shantung. With the building of the railways and granting of preferential rights and leases of territory to Japan and Germany, the old treaty ports have been gradually overshadowed by their more favored rivals, and today Dalny has superseded Newchwang as the port of Manchuria and Tsingtau denominates the trade of Shantung to the prejudice of Chefoo. As in Manchuria where China ceded preferential railway rights to Japan and bound herself not to build any lines which might compete with the South Manchuria railway, so in Shantung China agreed that German capital should have preference in the development of the province in case foreign capital was called on. While the Fakumen railway project in Manchuria was entered into by China from purely political motives to overcome Japanese preponderating influence in Manchuria, it seems clear that no such motives underlay the proposed railway in the German sphere. However *Chinese Public Opinion*, the official native organ at Peking, stated in regard to this project under date of December 24th ulto:—

"One of the most profitable railway ventures yet proposed in China is undoubtedly the scheme for building the railway connection between Chefoo and Wei-hsien. This line will penetrate into the heart of Shantung Province and would bring to a Chinese port the produce of a very wealthy district.

'At this present we are informed that the Germans are most strenuously opposing its construction much on the same grounds as the Japanese have been opposing the extension of the Railways of North China to Fakumen and beyond.

"As a matter of fact the Chefoo line would run at right angles to the present Tsi-nan-fu Tsintau railway and would tap a considerable district which that line cannot hope to reach.

The German opposition to its construction is much of the same quality as that of the Japanese in Manchuria. Their idea seems to be that the further opening up of Shantung Province will divert the natural trade from the German port of Tsintau. This is tantamount to asserting that Germany, having leased a port in that Province and having obtained a concession to construct a certain branch of railway, has thereafter the right to close the whole province to further schemes of development, unless, perhaps, the planning of same is left in German hands to the end that they may divert the whole trade of the province to their leased port.

"This is surely equivalent to a declaration that by leasing Tsintau to Germany China forfeited the right to facilitate trade with any of her own ports in that Province. This is, on the face of it, an absurd and unreasonable contention. Great Britain would under such circumstances also have a right to demand a similar privilege with regard to Wei Hai Wai. How would Germany be able to combat such a demand, both countries having treaties under the 'most favoured nation' clause, with China?

"Surely then the owners of the province, ports in which only have been leased ostensibly merely as 'naval bases,' to the right of developing the resources of such province in whatever way they see fit.

"The line in question was sanctioned by the Throne many months ago. The money is forthcoming for its construction and everything is ready to proceed to work, but we hear the German officials in Shantung have forbidden its commencement. We hear also rumours, though we trust for the credit of Germany that they are untrue, that threats have been made that Germany will utterly ruin the promoters of the scheme and all officials who do not obstruct its successful carrying out; and have dared them to make complaint to the Throne. This sounds impossible, but it seems certain that the delay in the construction of the line does not come from Chinese sources.

"We trust that enquiry may be instituted, by the Board of Posts and Communications, which may lead to the removal of the obstruction, whatever it may be, and the speedy commencement of the construction of the line, to the benefit of the Province of Shantung and the Imperial Exchequer."

This was nearly a year ago, yet the road is still in the visionary stage. It would appear, however, that much of the delay arises from the fact that the Chinese cannot raise the necessary capital for the construction which is estimated at $10,000,000. A meeting of leading merchants in Chefoo last year succeeded in placing $1,000,000 in $5 shares, and application was made to the Board of Communications at Peking for permission to start the line. When the sum of $2,000,000 was fully subscribed, it was intended to commence operations. After all the requirements of the Central authority were satisfied, the road was officially sanctioned.

The following is a translation of the rules and regulations drawn up at the meeting of merchants with regard to the above enterprise published in the *Chefoo Yih Pao*.

1.—The corporation shall be styled as "The Shantung Mercantile Chefoo-Chining Railway Company Limited."

2.—The Company proposes to raise a Capital of $2,000,000, divided into forty thousand shares, of $5 per share, of which the first instalment of 20% will date from the 1st day of the 2nd moon and to rank as Share Certi-

ficates pending the issue thereof—30% to be raised in the following year in monthly payments, and the remaining 50 per cent in the 36th year of Kwang Hsu; said scrip to be exchanged in due course for Share Certificates, and interest to be paid thereon. To prevent abuses or fraud owners of Scrip or Share Certificates that may be lost or destroyed by fire should advertise the fact in the public press, and at the same time notify the company, who will, after the expiration of three months, should no claim be made thereon in the meantime, cause new Certificates to be issued in lieu thereof.

3.—Upon the organization of the Company the twenty Promoters shall *ipso facto* become Members of the Board to be constituted in the manner as hereunder set forth:—

(*a*)	A Director—to hold at least shares to the value of.....	$20,000
(*b*)	Assistant Director.....	10,000
(*c*)	Advisory Committee.....	5,000
(*d*)	Consulting Committee	2,000

Only Shareholders with the above qualifications are eligible for the Offices named at the General Meeting.

4.—The original purport of the company is to construct the line from Chefoo to Chiningchow, but owing to difficulties due to time and the lack of proper survey of the interior, the promoters deem it advisable for the present to build the track as far as Weihsien.

It is apparent however, that there is some serious hitch in the program, as no further progress has been reported.

A recent article in *The Tientsin Sunday Journal* says of this project:

"The question of a railway line from Chefoo to Wei-hsien is still a burning one among the native merchants in Chefoo, Laichowfu and Tungchowfu prefectures. A great deal of talk has been done, but no decision has yet been arrived at.

"A few months ago, a Chefoo merchant named Shao applied to the Board of Commerce to be granted the concession of this line. The Board of Commerce instructed the Governor of Shantung to make inquiries as to the methods Shao intended to adopt. The Chefoo native Chamber of Commerce and the Customs Taotai went carefully into the matter and found out, without much trouble, that Shao could only put up a ridiculously small capital, and that moreover he had really not the least idea about the concession he had applied for. His petition has therefore been rejected by the Board of Commerce, so that matters are at the same stand as they were when the question of building this railway was first started.

"A very wealthy Chefoo merchant has now come forward with a better defined and practical programme. He proposes to set the ball rolling and has offered to put up two million dollars. He has asked that the Concession be transferred to him, and he will get his brother merchants to subscribe substantial amounts, so as to bring up the total capital to a size sufficient to enable them to begin active operations.

"Governor Sun Pao-chi realizes that whatever capital the merchants may subscribe, it will be quite inadequate to cover the cost of constructing a line 700 li in length. The cost of the line is bound to reach a very high figure. His Excellency does not see how it will be possible to construct the line without the financial assistance of the Central Government. Governor Sua thinks that the best plan will be to put the scheme in the hands of the Government.

"It is now proposed that, in addition to the capital to be put up by the Shantung merchants, to apply to the Government for a subsidy to meet the balance of capital required; and to put the line under the direct control of the Board of Communications. H.E. Sun has asked H.E. Luhaihwan to draw up a memorial to present to the Government.

"The Governor agrees with the merchants, that a railway line to Chefoo is of vital importance for the preservation of the trade both of this port and the commercial centres of the interior.

"The ports of Tsintau and Talienwan (Dairen) have caused much damage to the export trade of Chefoo and Laichowfu. Tsintau has practically captured the whole of the strawbraid and raw silk trade from Chefoo; while Dairen is doing active competition in the oil trade. This competition can only be counteracted by building a railway line as soon as possible.

"H.E. Sun Pao-chi intends to do all he can to influence the Central Government in favour of this railway project."

THE WU-KUANG RAILWAY
(Wuhu-Kwangtehchow.)

This enterprise is also known under the style of the Anhui Railway Co., Ltd. It had its inception in 1906 when Lord Li Ching-fang, adopted son of the late Li Hung Chang, formed a company with himself at the head for the construction of a road connecting the treaty port of Wuhu on the Yangtsze with the town of Kwangtehchow on the Chekiang border, a distance of about 150 miles. The direction of the proposed line is about south-west from Wuhu, passing through the towns of Wunchih and Ning Kwo Fu to Kwangtehchow and thence a few miles to the provincial boundary. Here the line was to connect with a branch of the projected Chekiang Railways to Hu Chow fu, or some point north of Hangchow, thus bringing Wuhu into rail communication with the systems centering at Shanghai. The initial steps in the formation of the company were conducted quietly and the outlook under Lord Li's direction was very promising. Li Hung Chang, at the time of his death, was reputed to be the wealthiest man in the world, and the millions inherited by Lord Li were expected to guarantee the rapid completion of the new road. Under Lord Li's direction the final survey of the line was concluded early in 1907 by a representative of Pauling & Co., Ltd., Mr. Muller, a Norwegian engineer engaged, and bridge girders, rails, sleepers, etc., were ordered for early delivery. A large block of river front land was purchased at Wuhu and building operations commenced. A canal about one quarter of a mile in length was also to be built with wharves on one side for river junks to load and discharge cargo. Wuhu is the center of one of the richest rice districts in China, and is the chief port in which this staple is marketed and exported to other parts of the empire. The reclamation work at the Yangtsze terminus was commenced in 1906. It is reported that the sum of Taels 4,000,000 ($2,600,000 gold) had been subscribed. Just as work was progressing satisfactorily and the outlook brightest in May, 1907, Lord Li Ching fang, the director general, was appointed by the Throne to the post of Minister to Great Britain. From the time of his departure the affairs of the company have gone to from bad to worse, and finally the work stopped for lack of funds. Officials of the Board and engineers examined the work completed in April last and there were rumors then that permission would be granted to float a foreign loan.

The amount necessary to complete the line is estimated at Taels 5,000,000 and the Board of Communications has since urged the shareholders and Anhui gentry to raise this sum and complete the line by 1913.

There are other projected roads in Anhui province, but none of these have taken definite shape, though it is reported that a short industrial enterprise has recently purchased rolling stock for the conveyance of its products. Early in May, it was reported that the Board of Communications had cancelled an agreement concluded by the British firm of Pauling & Co. and the Director-General of the Anhui Merchants' Railway Co., Chou Hio-hsi, son of the former Viceroy of Liangkiang, Choufu. According to this agreement, the British Company had to provide a loan of about Tls. 10,000,000 and to build the various lines of railways in the province of Anhui. Delivery of railway materials and the management of the line was to be reserved exclusively to the British Company. The Board of Communications, while not opposed to the loan, rejected the condition that delivery of material and management should be exclusively in British hands.

The contract was objected to by the metropolitan officials, natives of Anhwei province.

NOTICE

Offers are invited for the property, buildings, mill, ice plant and engines formerly belonging to the Hongkong Milling Co., Ltd., and situate at Junk Bay in the Colony of Hongkong, particulars whereof are as follows:

1. *Property*:—New Kowloon Marine Lot No. 4, situate in Junk Bay, immediately outside the Lyemun Pass, within the New Territories of the Colony of Hongkong and half an hour by launch from the City of Victoria. The lot has a clear sea frontage of about 780 feet, reclaimed, levelled and walled, off which there is available draught of water to permit of easy access by large ocean going steamers. Area:—189,300 sq. ft. Held under Crown Lease for the residue of a term of 75 years from the 7th February, 1905, at an annual Crown Rent of $434, with a right of renewal for a further term of 75 years, upon certain conditions. Included in the demise is a right of user of a fine supply of fresh water from a stream adjoining the lot.

2. *Buildings*—Mill and Cleaner House, 5 floors each, 50′×140′ and 15′ average clear height. Engine House, 65′×30′×18′ (high). Workshops, 60′×22′×18′ (high). Grain godown, 156′×280′×36′ (high). Flour Godown, 156′×80′×36′ (high). Latrines. Oil Tank, 18′ 6″ (diameter)×17′ (high). All built of red brick in cement mortar and completed in the year 1906. Bran godown 146′×40′×20′ (high), built of timber covered with galvanized corrugated iron. 50′ T head timber wharf extending 30′ beyond sea wall.

3. *Mill*:—A Double Unit Flour Mill complete, with a guaranteed capacity of 1600 barrels of flour of all grades per run of 24 hours, but under favorable milling of Pacific Coast wheat will produce 2,000 barrels per 24 hours. Supplied by the Wolf Co. of Chambersburg, Pa., U.S.A., at a cost of over U. S. $75,000. Erected in the year 1906 and guaranteed of the then most modern design and full sized.

4. *Ice Plant*:—One Can Ice making Plant on A Borsig's (Berlin) Anhydrous Sulphuric Acid System, with compressor, open air condenser, liquid cooler, ice tank, cans, frames, etc., can filter, belt driven crane for moving frames with ice cans, thawing off tank with tipping device, complete distilling plant, with pipes, valves, pumps, shafts, etc., complete. Producing about 20 tons per 24 hours in blocks about 50 lbs. each. Erected in 1908 and costing about Mex. $50,000.

5. *Engines*:—Three 3-cylinder Diesel Engines supplied in 1906 by Sulzer Bros. of Winterthur: two 250 hp. each and one 150 hp. Worked for about 18 months from beginning 1907. One 100 kw. generator 250 volts and one two panelled switchboard.

Offers for the above *en bloc* or in detail should reach the undersigned, from whom any further particulars may be obtained, not later than the 31st December, 1909.

DEACON, LOOKER & DEACON,
Solicitors for the Mortgagees,
1 *Des Voeux Road,*
HONGKONG.

IMPERIAL RAILWAYS OF NORTH CHINA

It was not until 1878 that any successful attempt was made to introduce the railroad into China. It came finally with the assistance of Director General Tong King Sing of the China Merchants Steam Navigation Company and Li Hung Chang, Viceroy of Chihli. The former was interested in securing a coal supply and the latter, while previously opposed to the Shanghai-Woosung line, became interested with Tong King Sing in establishing collieries in the Kaiping district in Chihli and, between them and their friends, the Chinese Engineering and Mining Company was formed. The first shaft was sunk at Tongshan in 1878. From this point to Pehtang the nearest port available was about 30 miles. The question of transportation became vital to the success of the company and even to Viceroy Li Hung Chang the railroad now appealed strongly. After some delay a railway was sanctioned by the Peking authorities and Mr. C. W. Kinder was appointed resident engineer in charge of construction. Suddenly for some reason the approval of this line was withdrawn.

The company, failing to secure reconsideration, proceeded to construct a canal from the colliery to Lutai, the nearest point on the Pehtang River. There were seven miles between the end of the possible canal and the colliery, and to cover this distance the Imperial authorities were induced to permit the construction of a tramway of standard gauge with the proviso that mules only would be used for motive power. The standard gauge for this mule tramway was secured only after a hard fight by the resident engineer and in 1880 the line was completed, and the first permanent step taken in introducing the railway in China.

Mr. Kinder did not propose to depend upon mules for his tramway for lack of persistence. He had succeeded in his fight for a standard gauge and he was encouraged to fight for a locomotive. Without consulting Peking, he proceeded to build a locomotive out of a portable winding engine and old iron picked up at the mines. It was not a fancy production but it served the purpose. Its cost was approximately 500 Mexican pesos and it was christened "The Rocket of China" on June 9th, 1881, by Mrs. Burnett, wife of the Engineer-in-chief of the company. As soon as Peking heard of this monster being substituted for the mules, an order was received prohibiting its use. It took some weeks to induce the authorities to withdraw their objection, but this was finally accomplished and "The Rocket" went into commission on construction work. This was the thin edge of the wedge that made for the general introduction, slowly but surely, of railways into China, and it is of interest to note that the success of this initial venture was entirely due to the recognition by Viceroy Li Hung Chang and Tong King Sing of the advantages of the railway for transportation purposes in opening up the rich coal deposits of Kaiping and especially so in view of the fact that each of these enterprising Chinese were personally interested in the success of the mining venture.

This initial railroad venture from the Mines to Hsukochuang was a success and two additional locomotives were secured in 1882. But Mr. Kinder saw his opportunity to extend the line. He succeeded Mr. Burnett as Engineer-in-chief in 1882 and at once began to urge the extension of the tramway to Lutai and succeeded with the assistance of Viceroy Li Hung Chang, now impressed with the value of the railroad. The Kaiping Railway Company was formed with a capital of $250,000 to take over the tramway and carry out the construction of the extension. A Chinese member of the British bar named Wu Ting Fang was given the management of the company and work was begun at the Hsukochuang end in 1886 and six months later it was completed and rolling stock, including an American locomotive and forty ten ton coal cars, purchased.

C. W. KINDER, C. M. G., M. I. C. E., ETC.
THE RETIRED GENERAL MANAGER AND ENGINEER-IN-CHIEF OF THE I.R.N.C.

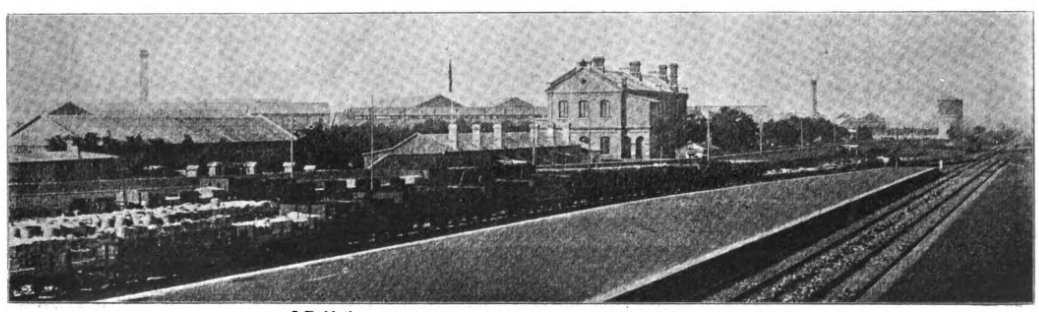
Then Viceroy Li Hung Chang became the champion of railway extension in earnest and by the time this line was completed to Lutai, the viceroy had a memorial before the Imperial authorities urging the extension of the line to Tonghu and on to Tientsin on the grounds that such a road was a military necessity and would tend to the better protection of the empire from invasion. This fortunately struck the right chord and the scheme was approved and directed executed. The name of the company was changed to the China Railway Company and a prospectus issued asking for subscriptions of Tls. 1,000,000, the Hongkong and Shanghai Banking Corporation being made bankers. This prospectus was endorsed by the Viceroy, but notwithstanding this influence it was with great difficulties that the promotors financiered the scheme. The section to Tongku was completed in April 1888; in August, Tientsin was reached; in October the viceroy inspected the entire line, and in November two trains passed daily between Tongshan. The item of cost of construction of this line was exceedingly low. It averaged about £5,000 a mile.

Permission was then asked to extend the railway from Tientsin to Tungchow, a point about 12 miles east of Peking as well as to extend the line eastward to Shanhaikwan. This roused the reactionary party at the capital who opposed the Tungchow extension on the ground that it would expose the capital to foreign attack. This fight against the extension was carried to extremes and resulted not only in blocking the decree, but by inciting the junk owners to the extent that the bridge over the Peiho at Tientsin, then being constructed to connect the foreign settlements with South Tientsin, was directed destroyed by the viceroy to quiet the people. But the extension to the east were completed to Kuyeh in 1890. In 1891 the extension to Shanhaikwan was authorized and the Chinese Imperial Administration was formed with Mr. Kinder, Engineer-in-chief, to carry on the work which was completed in 1894.

In the meantime permission had been granted to continue the railway to beyond the great wall, and in 1894, at the outbreak of the war with Japan, the line had been constructed to 40 miles beyond Shanhaikwan. The following year the war was concluded by the treaty of Shimonoseki at which His Excellency Li Hung Chang represented China. Upon his return he took up the matter of the Tungchow extension, the sanction for which had been withdrawn in 1888, with the result that it was renewed with a change of terminus to Lukouchiao and construction began in 1895. The line however was not built to Lukouchiao, but to Fengtai and from there later to Machiapu. This change was made without authorization, but was accepted by the Chinese apparently without protest.

In the meantime the line of the China Railway Company from Tientsin to Kuyeh was taken over by the Imperial Railway Administration and the shareholders of the company were reimbursed for their script by government bonds bearing five per cent. Up to this time the liabilities of the Imperial Railway Administration was Tls. 2,540,000 divided as follows:

Hongkong-Shanghai Banking Corporation advances, Tls. 1,240,000; due the Russo-Chinese Bank, Tls. 600,000, and due the Deutsche-Asiatische Bank, Tls. 700,000. To take up these liabilities and carry on the extension to Hsinminting, it became necessary to float a loan, and for this purpose Hu Yen Min, the governor of Peking and Director General of the Chinese Imperial Railway Administration, with the British and Chinese Corporation, a Syndicate formed by the Hongkong and Shanghai Corporation and the firm of Messrs. Jardine, Matheson & Co., and a loan for Tls. 16 000,000 to be used as implied in the contract: "For the construction of a railway line from Chunghousa to Hsinminting, and a branch line to Yingkow, and for the redemption of previous loans to the Tientsin-Shanhaikwan and Tientsin-Lukouchiao lines." Then followed a Russian protest on the ground that it interfered with Russian rights in Manchuria. The Russo-Chinese Bank entered into competition to handle the loan on more favorable conditions. Finally the matter was adjusted and an understanding arrived



I.R.N.C.—THE TONGSHAN CAR AND LOCOMOTIVE WORKS.

at by which Russia was practically recognized as having the right to extend her railway interests to South-Western Manchuria and by which Russia agreed not to seek railway concessions in the Yangtze valley. The reference to the construction of the line to Hsinmingting provided that it should be built by China and that European engineers be allowed to inspect the work. The loan agreement was, however, signed June 15th, 1898, and construction commenced in the autumn of the same year After overcoming many difficulties the line was extended to a point 30 miles beyond Yingkow by February 1900. From Kaopangtzu the line was then extended further for 20 miles when the Boxer troubles intervened.

In the meantime, Hu Yen Mei was succeeded by Chang Yen Mao. The latter was not in sympathy with Engineer-in-Chief Kinder and not a few attempts were made to have Mr. Kinder removed, but without success, and it must have been gratifying to this successful and enterprising engineer and railway pioneer that his services were recognized by his sovereign at this time and as a mark of Her Majesty's esteem created a Companion of the Order of St. Michael and St. George.

The boxer troubles interfered greatly with the program under way and the invasion of the allies for a time threatened international complications over the line. The council of the allied admirals gave over the control of the Tientsin-Tonghu section to the Russians. The latter later assumed control of the Tientsin Yangtsun section but found the British established at Fengtai. The strained relations between the British and Russians was somewhat accentuated by the proposal of Count von Waldersee to give the Russians the supervision of the Yangtsun-Shanhaikwan section and the German military to take charge of the Peking-Yangtsun. The British landed at Shanhaikwan in September, and in October a Russian force arrived and claimed the line from Newchwang to Tonghu by right of conquest. Count Waldersee's order was revoked soon afterwards and by January, 1901, an agreement was arrived at by the different powers whereby the Russians retired and the Peking-Shanhaikwan section was turned over to the British the latter part of February. In March there were more conflicts of interests in Tientsin, but a clash was avoided and while the differences were engaging the British and Russian governments the British Railway Administration was busy repairing the line. In August, 1902, the provisional military government in Tientsin retired and Viceroy Yuan Shih Kai took charge and it was not until October, 1902, that the British Administration assumed charge of the Shanhaikwan-Newchwang section to be turned over later to the Chinese Imperial Railway Administration. During the period that the British Administration was in control a twelve mile branch was built to Tungchow at a cost of £30,000.

With the renewal of active construction after the Boxer troubles the line was completed to Hsinminting in the latter part of 1903. An estimate of the cost and equipment of this line, a distance of 588 miles in all, is placed at about $40,000 gold a mile. The net revenue for this line has given a return of 4.75% on capital invested, for 1903; 7% for 1904; 20.75% for 1905 and 18.25 for 1906.

The connection between Hsinminting and Mukden is a narrow gauge built by the Japanese during the Russian-Japanese war and taken over in 1907 by purchase by the Imperial Railway Administration.

The building of the six mile branch from Tangho on the Peking-Shanhaikwan line to Chinwangtao, a few miles to the South of Shanhaikwang, was another addition to the facilities of the line as a result of the Boxer troubles.

Up to the end of the fiscal year September 1908 the capital authorized and created for the I.R.N.C. amounted to a total of Mexican dollars 49,594,428.57 of which $21,994,428.57 is represented by the interest of the Imperial Chinese Government and Chinese shareholders. The balance of $27,600,000 is represented by the 1899 loan of £2,300,000 from the British & Chinese Corporation, officially known as the Peking-Newchwang Railway Loan, running for 45 years at 5% interest. Of this loan, after paying the fourth drawing in 1908, there remained the sum of £2,070,000 ($24,840,000 Mex) outstanding on the 30th of September 1908.

The Expenditures on capital account stand at $24,000,000 to permanent way; $2,142,857.14 expended under the provisions of clause 2 of the Loan Agreement for improvements and additions to the rolling-stock recommended by the British Chief Engineer, and then estimated at Taels 1,500,000; the extension to Tungchow, $360,000; Lines under construction, $18,435,652.59; Extension to Hsiku, $305,353.89; Hsinnimfu-Mukden Line, $1,624,428, a total of $46,868,292 to capital account, leaving a credit balance of $2,726,136.38 against the total capital of $49,594,428.57.

About one sixth of the total expenditures on capital account was paid from profits, the amount at the end of September 1908 standing as follows:

Rolling stock	$584,243.92
Yard Buildings & Track	802,015.92
Tongshan Engineering School	91,268.98
Tongshan Works	476,082.71
Expended in 1908	1,953,611.53
Expended in previous years	5,812,467.47
Total	$7,766,079.00

The Revenue account of 1908 was, EARNINGS —Passengers, $4,898,632.50; Freight, $5,861-195.14; Military Traffic, $51,079.92, and Miscellaneous, $256,769.56; a total of $11,067,677.12

EXPENDITURES: Maintenance, $653,149.00; Rolling Stock, $1,529,285.86; Traffic $375,168.10; General Charges, $517,964.16, a total of $3,075,567.12, leaving a profit of $7,992,110.00.

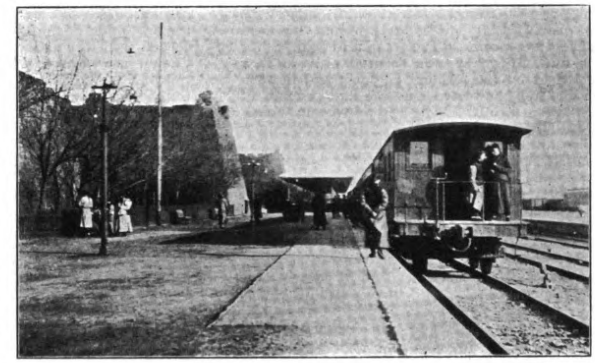
A credit balance carried forward from 1907 of $6,658,763.20 in addition to the above, gave the road a working credit balance of $14,650,873.20.

This is accounted for by the following expenditures:

To debenture Loan, 4th instalment	690,000.00
To debenture Loan Interest	1,172,570.67
Chinese Shares and Notes	21,819.43
Reconstruction of Boxer Damage	77,305.30
Paid to Imp. Ch. Govt. to % of Peking-Kalgan Ry. construction	3,839,288.25
Hsiling Line, Working	67,425.58
Hsin Chiu Mine & Survey	204,165.03
Shipping Department	60,203.11
Tongshan College, Upkeep	70,982.94
Bonus to Employees	197,285.70
Betterments taken from Revenue for capital %	1,953,611.53
Balance on hand	6,296,215.66
	$14,650,873.20

SHANHAIKWAN BRIDGE WORKS —Close by the line at Shanhaikwan, branch shops have been erected and designed especially for the construction of bridge work. The plant is fully equipped to cope not only with the requirements of the I.R.N.C., but also to handle the business for other roads in China. In fact the works were laid out on a large scale, hoping that with the support of the government a large industry would eventually develop, with the construction of other government railways. However, so far the hopes of the directors have not been realized, for despite official approval and support, new bridges for other roads are invariably ordered direct from abroad. This is undoubtedly due to the high cost of transportation and handling involved in shipping the steel to Chinwangtao, thence by rail to Shanhaikwan, and the subsequent rehandling and final shipment to point of destination in China. These charges effectively counteract any advantages the shops may possess from a wage standpoint, and confines their sphere of usefulness to a very restricted territory. Bridges for the I.R.N.C. and their extensions will continue to be made here, and with the proposed extensions northwards to Tsitsihar, the works may some day justify their existence. In 1907 only 1061 tons of steel work were handled, which was confined to 22 spans of 100 feet for the Liao River bridge, and the caissons. The Newchwang ferry steamer was also completed. In 1908 the tonnage of work turned out was 1,498 tons. The outlook for the future prosperity of the plant is dismal as nearly every railway in China follows its own ideas in regard to bridges instead of adopting the Government Standards. The directors of the road, or those in charge of the works, speak of the situation as regrettable, and advocate compulsory acceptance of these standards, adding that "imported girders are rarely as good as those built at Shanhaikwan, and only in Southern China can they be procured any

I.R.N.C.—PEKING TERMINUS.



I.R.N.C.—THE OLD PEKING STATION.

I.R.N.C.—TONGKU STATION

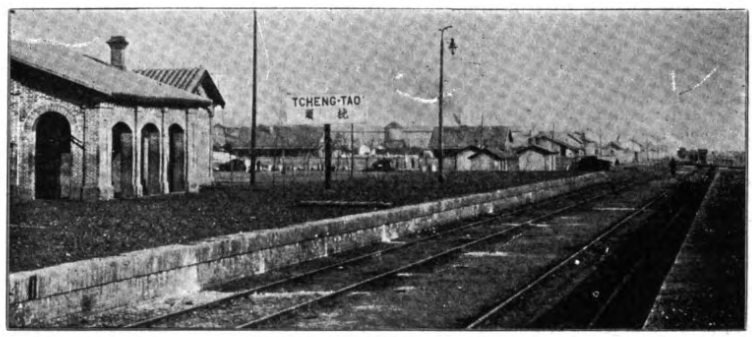
cheaper." In stating that the refusal of other roads to patronize the Shanhaikwan Works is largely due to a desire to purchase only through certain channels, the Engineers' Report for 1908 permits the public to place its own construction on its meaning. It is fair to assume, however, that the Shanhaikwan Works under the supervision and control of British Engineers follows closely along British principles of bridge building and British standards of structural steel forms. The permanent or compulsory adoption of such principles as Standard for all roads in China is of course a most laudable ambition for those having the works in charge and would result in giving British steel manufacturers a practical monopoly for the future bridge business of China, freezing out continental or American makers.

In these days when specifications can be so adroitly worked out and manipulated so that an ordinary innocent set of requirements may call for something which can only be supplied by a certain manufacturer it is hardly fair to all concerned in the development of China that any one national set of standards be permanently applied to the building of roads or bridges. I have heard it stated—of course it cannot be accepted as a fact—that British bridge designers, responsible for railway bridges in China, are rather extravagant in the weights and quantities of steel employed to carry a certain load, following the well established British desire for permanency and extra over load factor for safety. And I have heard American comments to the effect that the same bridges on which it was impossible for them to tender owing to the use of standards and sections only manufactured in Great Britain, could have been designed to carry the same load, and with as great a factor for safety, by the use of much less material and consequently at a much reduced cost. British bridge builders have erected some of the best structures in the world, and the Americans also claim to have engineered a few works of importance, and the question is of course a very delicate one to handle and comment on in a field like China.

Unless a combination of both national bridge principles and steel sections are officially adopted as the standard for China, regulations favoring any one country will hardly be accepted without strenuous opposition by competitors.

The lack of orders and work for the Shanhaikwan Shops will probably result in their closing down in the near future, unless as intimated, the Tsitsihar extension of the I.R.N.C. is sanctioned and financed.

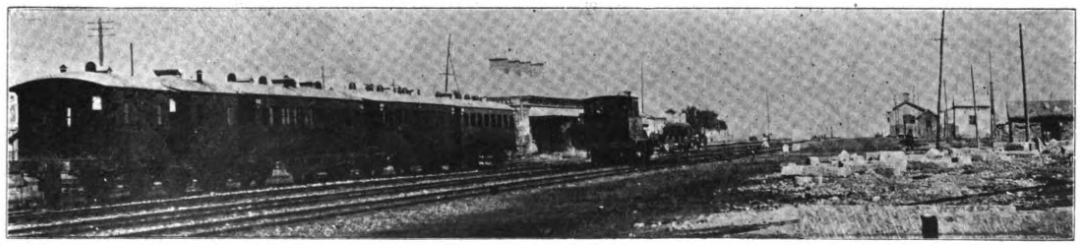
The new Liao River Bridge, 2000 feet long—the second longest bridge in China—consisting of 20 spans of 100 ft. each, was built at the Shanhaikwan Shops, and successfully erected under the supervision of the railway engineers. Concrete foundations for the piers were carried down to a depth of 70 feet below the river bottom and great vigilance and care was necessary to provide against the destruction of the work at the spring break up of the ice bound river.



I.R.N.C.—TCHENG-TAO STATION.

TONGSHAN WORKSHOPS.—The locomotive and car shops of the I.R.N.C. are located at Tongshan and are undoubtedly the largest and best equipped works in China or Eastern Asia The illustration of the works will give a fair idea of their extent and importance.

I.R.N.C.—PEITAIHO STATION.



I.R.N.C.—TONGKU STATION

I.R.N.C.—NEWCHWANG TERMINUS

Locomotives and cars are here designed and built not only for the requirements of the I.R.N.C., but also for other roads in China. Under the supervision of the ex-General Manager, C. W. Kinder, C.M.G., and the Shops' Manager, Mr. Jamieson, the Tongshan Works have established a high reputation for the quality of work turned out, especially in the construction of cars. As will be seen from the accompanying illustrations, standard cars and locomotives for all services have been designed and built for the road and accepted as standard by the Central Railway Board for use on other roads. The work is of a high quality specially adapted for China's requirements according to British ideas and practice

In 1907 the new works were practically completed and the old car shops were turned over to the Chinese Engineering & Mining Co. The general arrangement of the new car shops established near the main works is that of one open traverser pit affording accommodation for buildings of a total area of 140 000 square feet.

In 1908 the I.R.N.C. had a total equipment of 267 passenger coaches, 2,743 freight cars with a capacity of 53,843 tons, and 126 locomotives of a total of 5,569 tons weight. In 1907, the car shops turned out 223 new cars for the use of the I.R.N.C. of which only 3

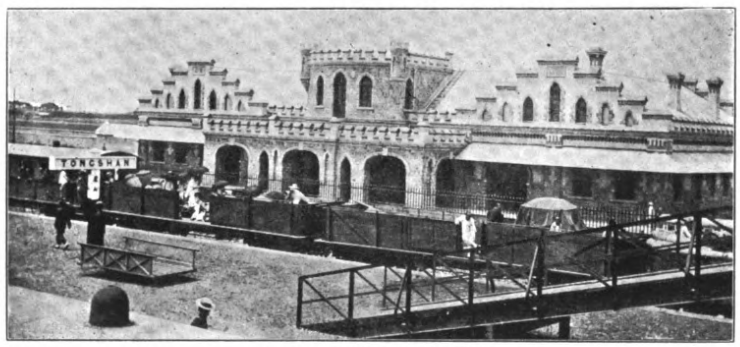
I.R.N.C.—NEWCHWANG STATION

British ideas, British standards and British principles predominate in all work turned out by the Tongshan shops. Through closer intimacy and contact with the authorities at Peking, and the fact that all profits of the undertaking go to swell the government revenue, those in charge of the Tongshan shops have influenced the adoption of their cars as standard for all of China. Sooner or later order must come out of the existing railway chaos, and China compelled to follow some standard practice, so that interchange of freight and passenger cars can be carried out on various connecting roads. On these standards will depend to a large extent the future control of the railway market of China. At present Great Britain leads. With British Engineers controlling the largest government car works in the Empire and constructing cars for other roads, British railway principles are in a fair way to become standard and dominate the field.

Most of the locomotives in use on the I.R.N.C. have been secured from British makers and naturally have given great satisfaction. Some American locomotives have also been purchased and have naturally given great trouble. In fact I know that the working of British and American engines on this road has been employed to influence the acceptance of British tenders for other roads. Whereas British engines, on the I.R.N.C., have always given every satisfaction, the American engines, it is urged, spent a great deal of time in the shops under repair and costing much more for running expenses than the British ones.

With the complete indifference of American manufacturers to this great field, and their refusal to look the situation square in the face, there is only one termination to the unequal contest. With British, German and French engineers insisting that the worst make of their own nationals is superior to the other fellow's and any of them better than American, it is difficult to see what the latter is going to get out of the field. Only when Chinese roads are untrammelled with Loan Agreements, has American material stood a chance, and aside from this, whatever progress has been made to date with American cars and rolling stock in China is largely due to the push and hustle of the Japanese.

It is a foregone conclusion that the ideas of the British managers of the I.R.N.C. will ultimately influence the Central Railway Board's selection of permanent standards for the Empire.



I.R.N.C.—TONGSHAN STATION

were for passenger service, and 163 cars were constructed for other roads.

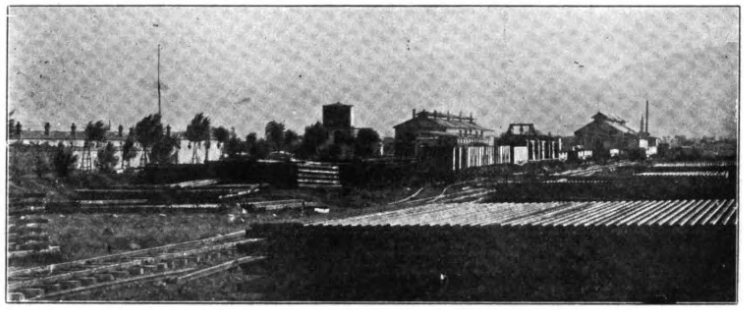
In 1908 the works completed 100 cars for its own service, and in addition constructed the following cars for other roads:

KALGAN RAILWAY:	
Composite Coach	1
Pony cars	26
Pig cars	10
30 Ton Covered Goods Cars	4
30 Ton High Sided cars	29
30 Ton Low Sided cars	29
KIANGSU RAILWAY:	
30 Ton Low Sided Cars	10
YUEH HAN RAILWAY:	
30 Ton Low Sided Cars	20

There was also in process of construction for 1909 delivery, 24 cars for the I.R.N.C. and 52 cars for the Kalgan Road.

The prices charged for this work are said to defy competition, but despite this advantage, the cars are not accepted by all roads in China. As noted above in regard to the bridge works,

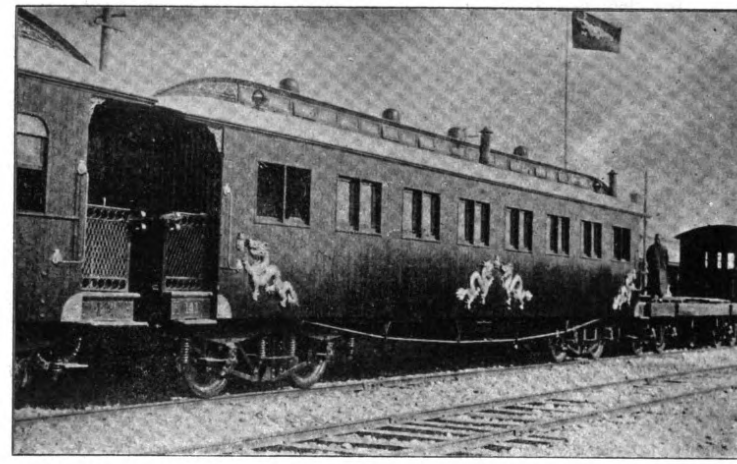
I.R.N.C.—TIENTSIN SETTLEMENT STATION



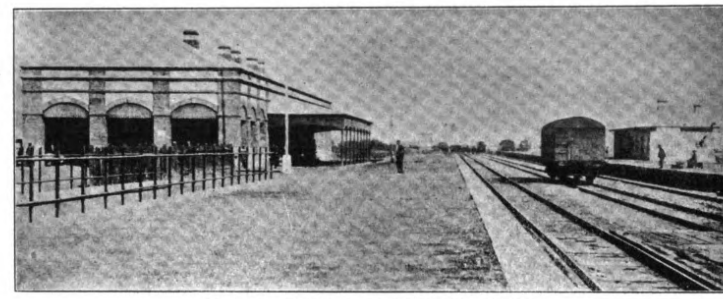
I.R.N.C.—SHOPS AT TONGSHAN

TONGSHAN RAILWAY AND MINING COLLEGE.—One important development of the Imperial Railways of North China is the Railway and Mining College at Tongshan. The following remarks on this institution from the Customs' Report of Tientsin are interesting:

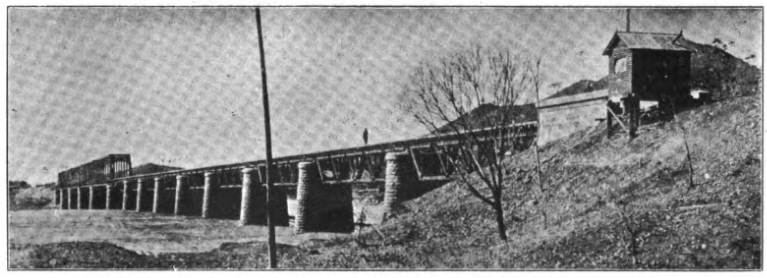
"The aim of the Chinese, which has lately become increasingly manifest, to develop their country's resources and administer and operate its public conveniences, as far as possible, by the work of their own people, is one which must meet with sympathetic recognition so long as it does not lead to a too hasty cutting adrift from Foreign aid in the establishment and conduct of industries and undertakings, for which China is still a new field. The preparation of Chinese by sound technical education, abroad or at home, to fill, when thoroughly fitted, the more responsible positions in connexion with railways and mines is a work of the utmost importance; and the establishment at Tongshan, in March 1907, of a railway engineering and mining college for Chinese students is a step in this direction which should not go unrecorded. Previous to 1900 a college for instructing students in railway engineering had been in existence at Shan-hai-kwan; but the present institution is on a larger scale, and consists of a set of handsome red brick buildings with boarding accommodation for 160 students, who are, as regards discipline and domestic matters, controlled and superintended by a Chinese official, who is styled Proctor. Besides the dormitories and living-rooms for the students, the college compound contains numerous lecture rooms, as well as residences for the Foreign teaching staff. This staff consists of four professors or lecturers, all of whom are British. There are at present 120 students (ages, 18 to 35), and it is said that for the 40 vacancies shortly to be filled there are 700 candidates. This number will probably be reduced to 400 by the "qualifying knowledge of English" and "pass the doctor" tests. The keenness to enter the college thus shown must, however, perhaps not be made too much of, as the students are not only boarded and kept at the college free of expense, but are, besides, given pocket money, while a career in the railways or mines of China is practically assured them at the end of their college course. This course is a four years' one, and includes practical work in addition to lectures and examinations. Football in the winter, and in the summer lawn tennis and swimming—this latter in a fine bath specially built within the college grounds,—are keenly taken part in by the students. The college owes its establishment to the forethought of H. E. Yuan Shih-kai, lately Viceroy of Chihli; and it is supported by the Imperial Railways of North China and the Chinese Engineering and Mining Company, the mining company contributing four-fourteenths of the expense and the railway ten fourteenths. It is probable that this college will serve as a model for other similar institutions which will in time be started in other parts of China, as already during the past year various interested Chinese officials have paid it visits of inspection. A common drawback to the full efficiency of institutions of this kind in China is the tendency of students, in their haste to begin to earn a living, to leave them too soon and go into the world with only a smattering of knowledge or with a very inadequate preparation for their work. It is hoped that the provision made for the maintenance of students while in college will minimise this tendency, so that the institution will send out men fully equipped for their work.'



I.R.N.C.—SALOON CAR FOR THE IMPERIAL FAMILY BUILT AT THE TONGSHAN WORKS



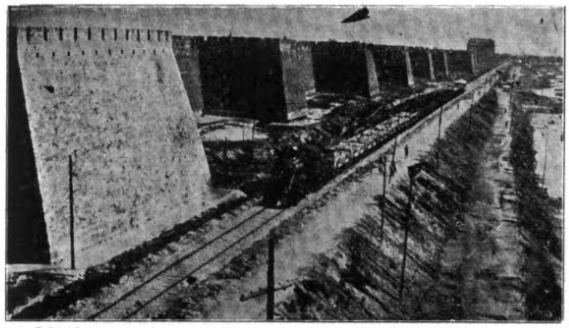
I.R.N.C.—TIENTSIN NATIVE CITY STATION



I.R.N.C.—LANCHAU BRIDGE

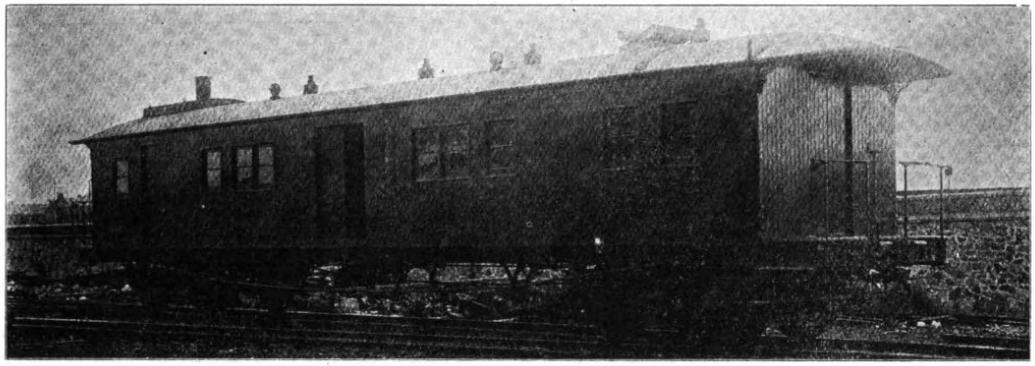
As in the case of the Imperial Maritime Customs, where Great Britain exacted a promise from China that as long as British trade predominates, the Inspector General shall be a British subject, so in the case of the Peking-Newchwang Loan Agreement, the financiers provided for British employees during the currency of the Loan. The term of the loan is 45 years, repayable in 40 equal annual instalments commencing with the 6th year, and provision is made against the possibility of China redeeming or converting the loan.

Clause 6 of the Agreement stipulates that the Chief Engineer must be a British subject and the principal members of the railway staff



I.R.N.C —ALONG THE WALLS OF THE TARTAR CITY, PEKING

I.R.N.C.—HSINMINFU STATION



I.R.N.C.—55′ BAGGAGE AND MAIL CAR

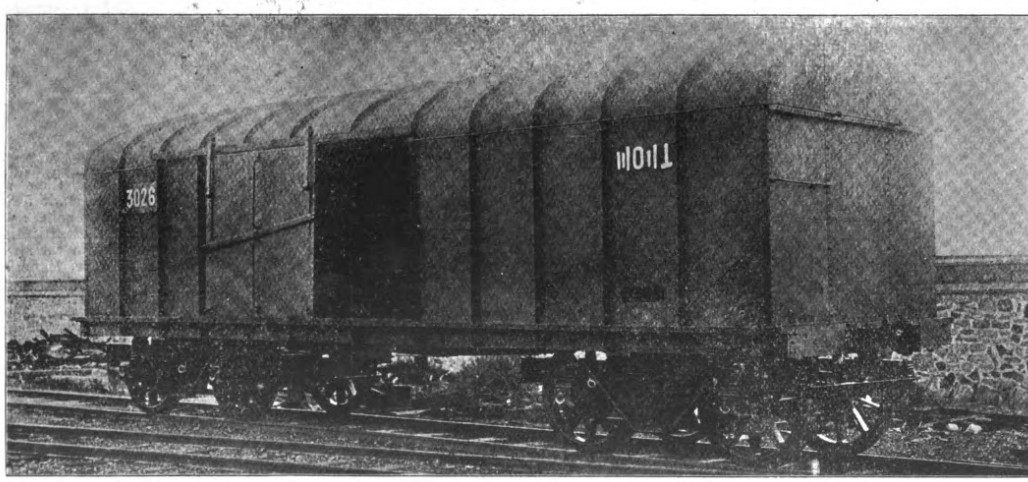
and chief accountant must also be Europeans, and they can only be dismissed in the event of their misconduct or incompetency, and then only after consultation with the Chief Engineer. Provision is made for the appointment of competent Chinese to responsible positions.

The British principal of the Engineering College was engaged in 1905 under an agreement with the Railway which allowed of three months' notice on either side to terminate it. Without any reference to the Chief Engineer, the Directors of the Road last year gave the principal the usual 3 months' notice and a storm of criticism was the result. The dismissal of several other employers without consultation with the Chief Engineer occurred about the same time, and the feeling ran so high that the British Secretary for Foreign Affairs was requested by a member of Parliament to make inquiries about the matter, and prevent persistent violation of the Loan Agreement.

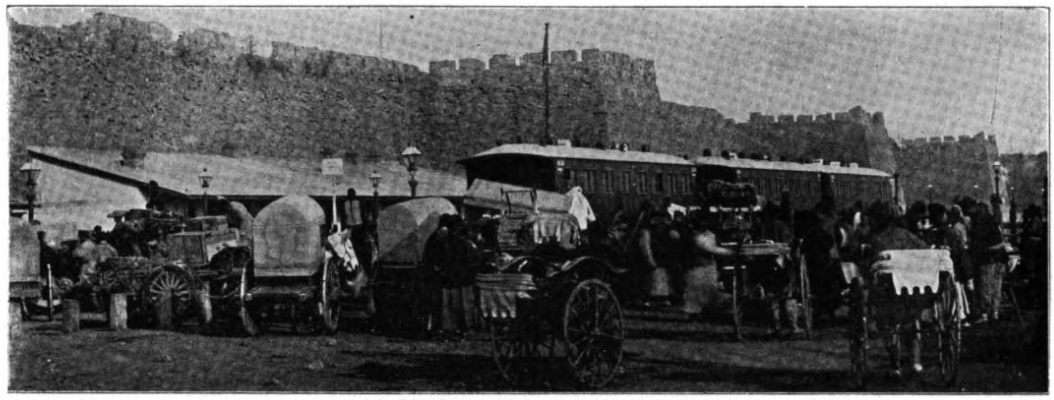
Under the late regime of H. E. Chen-pi as head of the Railway Board, matters reached an unpleasant crisis, resulting in the resignation of Mr. Kinder after 30 years' distinguished services to China.

The reason for his resignation given by Mr Kinder was simply that of age, and a desire to return to England. It is well known, however, that his resignation under the circumstances was inevitable. British interests contend that he was deprived of all real authority, objectionable contracts entered into without his knowledge binding the railway for terms of years, and trustworthy English employés summarily dismissed without reference to him, so that his position became intolerable.

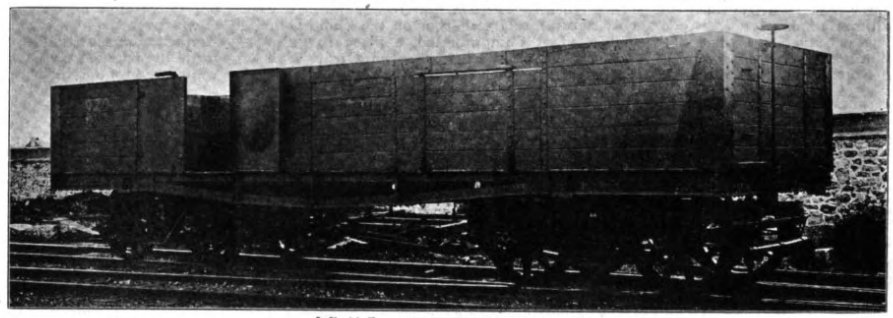
British opinion was greatly agitated over the apparent intention of the Chinese authorities to override the Loan Agreement, but the answer of China was well taken. All the provisions of the Loan were entered into to safeguard the annual repayment of principal and interest. When it became apparent that the enterprise was on such a solid financial basis that the annual profits of the road were sufficient to redeem the outstanding portion of the loan in three years, and that out of these surplus profits the construction of the Kalgan Road was undertaken, there were some legitimate



I.R.N.C.—STANDARD 30 TON COVERED GOODS WAGGON, BUILT AT THE TONGSHAN SHOPS



I.R.N.C.—OLD PEKING STATION

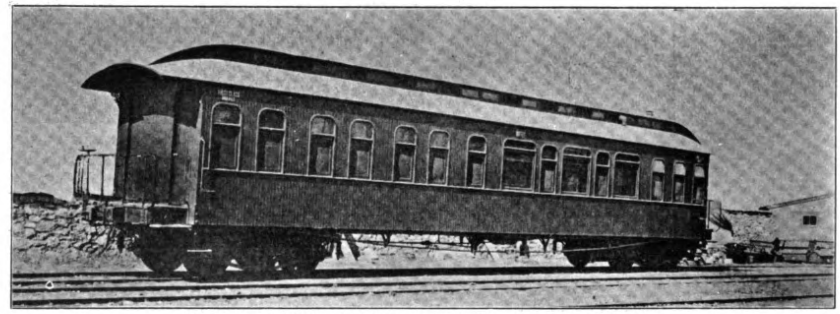


I.R.N.C.—STANDARD 30 TON CAR

reasons for the Chinese exercising greater control of their own property.

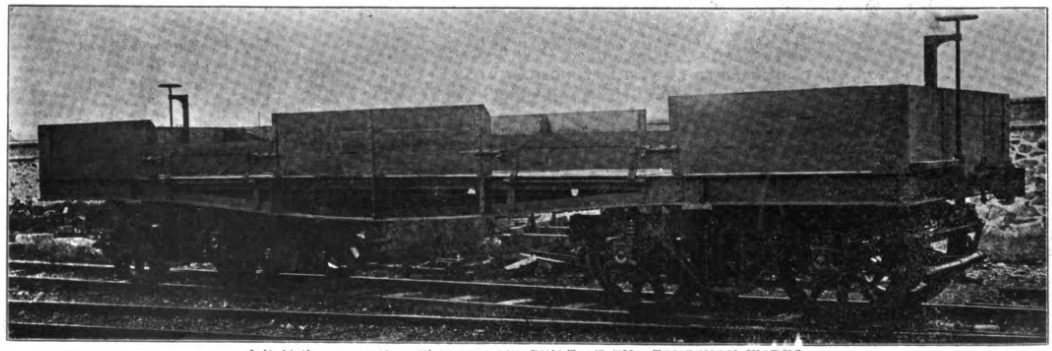
As the Imperial Railways of North China are conceded by all authorities to rest on a firm financial basis, and an increase of profits may be expected rather than the reverse, and as only the provisions of the Agreement impede the present repayment of the Loan, the holding out by the British engineer to the strict letter of the agreement reflects a lack of confidence in China's ability to run the road, without his assistance. This inference is of course resented by the Chinese. Mr. Kinder's attitude in denying to them the right to exercise any voice in the control of the road unless sanctioned by him, deeply wounded their pride and only helped to make him intolerable to the authorities.

As the British Loan participation in the capital of the road only exceeds the Chinese share holdings by $5,705,572 Mexican, there is little chance that they will intentionally weaken its financial standing or relax in efforts to increase profits. With these facts in mind any attempt by British interests to compel China to live up to the hard and fast provisions of the Loan, is accepted by the latter as an attempt to denominate the railway regardless of China's equity.

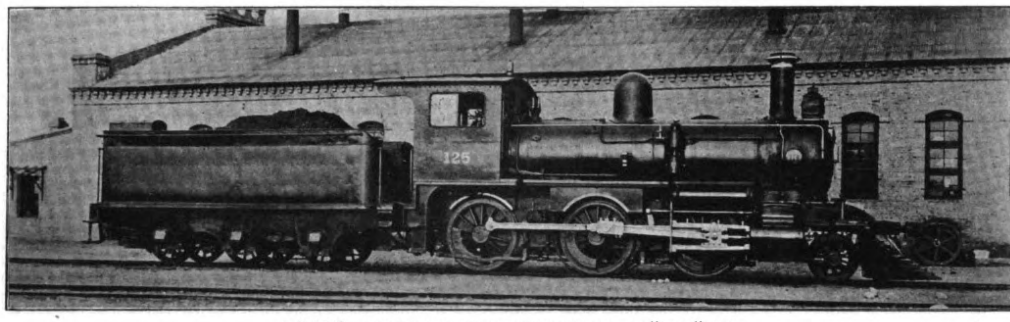


I.R.N.C.—BUFFET AND DINING CAR BUILT AT TONGSHAN

The situation is of peculiar interest to all other nations. If China submits to the dictum of an aggressive British Director and Chief Engineer or fails to assert her control over the property, British railway principles and standards will be forced on the Central Board for other roads in China, to justify the upkeep of Tongshan Car and Locomotive Works.



I.R.N.C.—30 TON LOW SIDE CAR, BUILT AT THE TONGSHAN WORKS



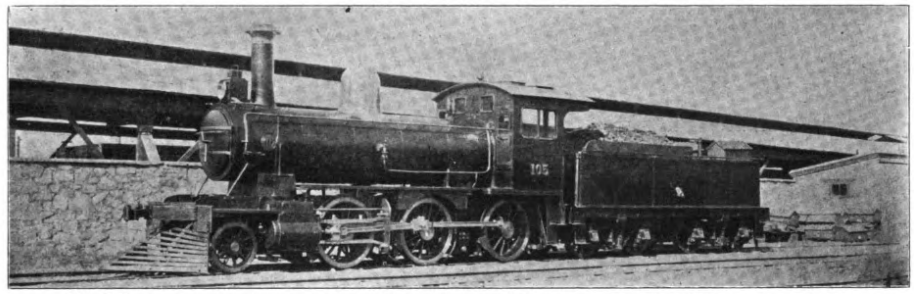
I.R.N.C.—STANDARD BOGIE LOCOMOTIVE—19″×24″ CYL.

CHINGWANGTAO

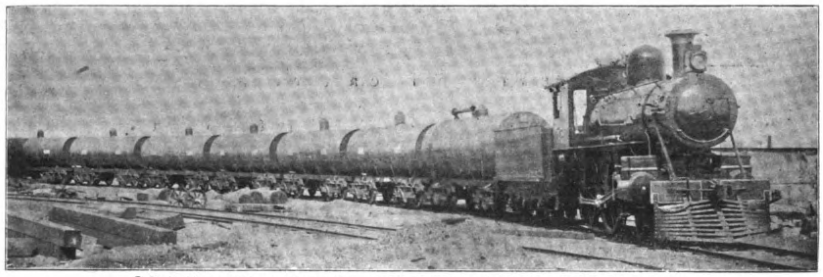
THE ONLY ICE FREE PORT OF NORTH CHINA

No article on Chinese Northern Railways would be complete without some reference to the port of Chingwangtao and its commercial and political significance. With the rivers and smaller harbors of North China frozen over for at least four months of the year, a serious handicap is placed on trade and the profitable operations of railways serving that part of the country. Tientsin, the great northern mart of China, the gate to Peking and outlet for the vast trade of the Northwest and Mongolia, is located on the Haiho, a river which at its best can only accommodate small coasting steamers with a draft of 14 to 15 feet. In 1908, out of a total number of 788 vessels entering the port at Taku, 511 went up the river to the Bund. For three or four months of the year Tientsin is closed to navigation by ice and trade comes to a standstill.

Newchwang, the natural outlet for the trade of Manchuria, located some miles inland on the banks of the Liao, is similarly situated. As soon as the freeze comes both of these important centres are closed for business. Dairen, the only ice free port on the Eastern half of the gulf, has superseded Newchwang as the distributing center for the trade of Manchuria. But Dairen is leased to Japan and is being developed to further the interests of the South Manchuria Railway and at the best it could not bring relief to Tientsin and the capital. The only natural ice free harbor on the Chihli Gulf is located at Chingwangtao, a place 10 miles west of Shanhikwan where the Great Wall terminates, 5 miles from Tangho, the station on the line of the Imperial Railways of North China, 165 miles from Tientsin, 251 miles from Peking and 272 miles from Mukden. At these distances from the trade centers of North China is situated the only open port through which the country can be served for four months of the year. As late as 1898 its importance was recognized and it was opened to trade as a treaty port, although at the time it was only a little fishing village. Considerable prominence was given the new port during the Boxer troubles as it was employed as the landing place for the foreign troops. Some initial steps were then undertaken to improve its facilities, but it was not until the Kaiping Mines were taken over by the Chinese Engineering & Mining Co. in 1901 that any serious attempt was made to make the port the real outlet for the winter trade of the Northern country. The necessity of having an assured outlet for the products of these mines compelled the Mining Company to purchase the land in the vicinity of the port and proceed to improve it with its own funds.



I.R.N.C.—STANDARD MOGUL ENGINE 16″×24″ CYL—4′ 6″ WHEELS BUILT AT TONGSHAN WORKS

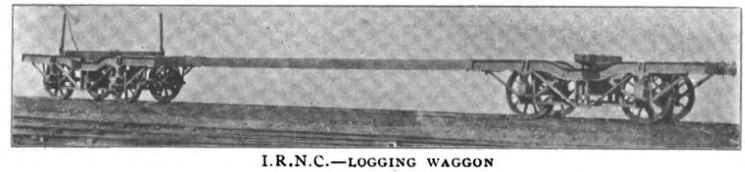


I.R.N.C.—30 TON OIL TANK CARS BUILT AT THE TONGSHAN WORKS

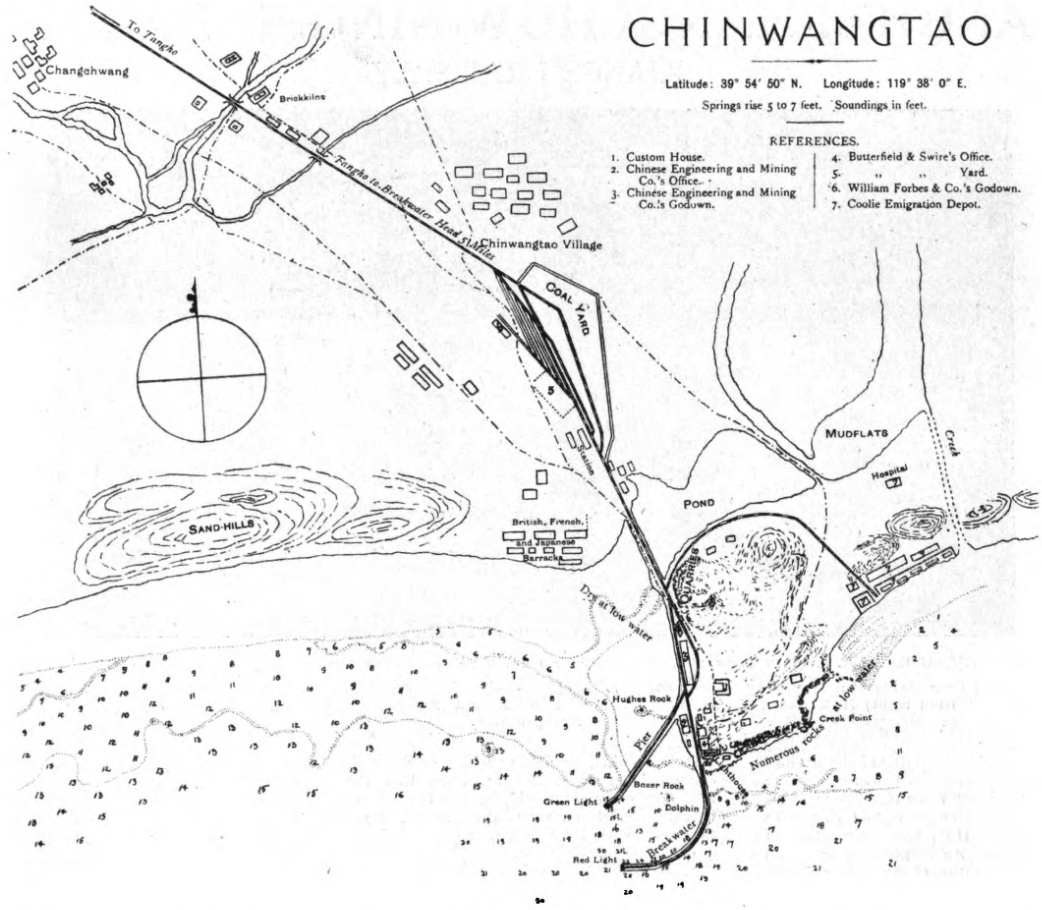
A pier of 350 ft. long capable of berthing several ships and a breakwater of over 1400 ft. was constructed, and suitable godowns and other buildings erected A complete description of the work was given in the FAR EASTERN REVIEW of May 1906. Dredging operations have been completed, increasing the depth to 25 ft. alongside berths. The following is an extract from the Review of May 1906:

"The Chinese Engineering and Mining Company, Ltd., owns the land in the vicinity of the port, and has constructed a breakwater and pier for the accommodation of shipping. At present six berths are available, the approximate depths of water being as follows:—

	Low Water	High Water.
Alongside pier (length 300′)..	16′	21′
Alongside breakwater (length 1300′).....	20′	25′
	13′	23′
	17′	22′
	16′	21′
	14′	19′



I.R.N.C.—LOGGING WAGGON



"Dredging operations are in progress with a view to increase the depth to 25' alongside berths. There is good sheltered anchorage in The Roads.

"The company's branch line to Tongho Junction connects the pier and breakwater with the main trunk line of the Imperial Railways of North China (Peking to Newchwang) and trains from the harbor are run to connect with all mail trains. Cargo is loaded direct from the ship's holds on to cars and *vice versa* so that a minimum of handling and consequent freedom from loss and damage are ensured.

"Chinwangtao is the natural distributing centre for the Northwest part of the great province of Chihli. The facilities, resulting from the company's liberal expenditure of capital, for the rapid and economical handling of cargo, have caused Chinwangtao to become also a formidable rival for the trade hitherto shipped through Tongku for Tientsin. A considerable portion of this trade throughout the year now passes through Chinwangtao, whilst during three months of winter, when the Pei-ho River is closed to navigation, the whole trade of Tientsin is carried on without interruption through this channel.

"Godown accommodation and covered storage are obtainable.

"The facilities for quick despatch may be gauged from the fact that a steamer was recently loaded with 2400 tons of coal in 13 hrs. There are three steam cranes to lift up to five tons, and arrangements can be made to lift weights of 15 tons. The expense, delay, and damage entailed by the lighterage of steamers which must be encountered at Taku Bar are here entirely obviated.

"The great increase of trade year by year has induced the Imperial Maritime Customs to specially erect a fine custom house with a deputy commissioner in charge, and to open a Haikwan Bank for the convenience of local consignees."

However, in spite of the excellent advantages afforded by the port, at an expense of over $1,100.00 gold, Chingwangtao has not developed according to expectations. As a coal port and a winter jetty for the north of China, it still maintains its supremacy, but the Tientsin merchants fail to avail themselves of its advantages for general trade in winter, preferring to rush cargoes in and out of Tientsin, just before the freeze and after the thaw. In 1908, 176 steamers entered and cleared from the port representing a tonnage of 279,095. The exports from the port are largely the products of the Mining Company, which included, in 1908, 211,565 tons of coal, and 1,623,560 fire brick.

It would appear reasonable to assume that the Chinese Government would lend every encouragement towards the development of this port, as an offset against Dalny. Newchwang's trade prominence in Manchuria has been gradually won over by the Japanese port, and her merchants are raising the cry of discrimination in freight rates. The Chinese Government, however, instead of assisting in developing one good central ice-free port for the service of the entire north, is bent on creating another which will be the terminus of the Imperial Railways for North China, and the Chinese outlet for the grain trade of Manchuria. To this end a new port for Manchuria has been proposed and is actually being surveyed at Hulutao 7 miles from Lienshan, a station on the Imperial Railways of North China, which is 94 miles nearer to Moukden than Chinwangtao and 70 miles nearer than Dairen. The harbor is situated near a fertile grain-growing district, and in the neighborhood an exceedingly good quality of coal is found, at present only worked by Chinese methods. This winter has not been severe enough to test whether the proposed port is free from ice, but the natives of the place state that it is. The fact that there is 30 feet of water at low tide and a rise of 10 feet at spring tides almost confines the natives' statement in itself. A breakwater will have to be built as a protection to the south-west winds of summer, but otherwise the harbor is said to be naturally complete. Besides being a port which would accommodate ships of great size and draught, the establishment of Hulutao would be obviously of great advantage to the Chinese, as it would enable them to have an excellent gateway to Manchuria, open all the year and under their own control. It would undoubtedly deprive Chinwangtao of its extra-mural trade, but would hardly affect its trade in the province of Chihli.

The construction of the proposed Chinchowfu Tsitsihar-Aigun line by China, tapping the trade of Eastern Mongolia, and the demand for an ice free port under Chinese jurisdiction for the regions served by the Liao River, and the Imperial Railways of North China, compels the construction of such a port as a commercial and political necessity for China. If as reported there are 30 feet of water at low tide, its advantages over Chinwangtao are obvious. However, it will be some years before the volume of trade will justify the enormous expense attached to the improvement of the port of Hulutao, and if the Government would extend more encouragement to Chinwangtao the proposed port would be superfluous

SHANGHAI-HANGCHOW-NINGPO RAILWAY

KIANGSU RAILWAY

KIANGSU RAILWAY: THE CHINESE ENGINEERS WHO BUILT THE ROAD FOR LESS THAN $20,000, GOLD, PER MILE

(3rd from right) MR. HSU WEN CHEOUNG, Chief Engineer.—(1st from right) MR. CHU, Divisional Engineer.—(4th from right) H. E. JEME TIEN-YU, the builder of the Kalgan Railway and Consulting Engineer to the Kiangsu line.

Ten years ago, when the Battle of Concessions was at its height in Peking, British interests were fully alive to the great value of a line connecting Shanghai with Hangchow and thence to Ningpo. In April, 1898, the organization of the British and Chinese Corporation had been effected by a combination of the leading British financial and commercial firms in China—the Hongkong & Shanghai Bank, and Jardine, Matheson & Co. One of the first projects engaging their special attention was the securing of a concession for this line so as to preserve British commercial preponderance at the mouth of the Great Yangtze valley. This projected road, running through one of the richest and most populous districts of China, would open up and develop the country, stimulate similar enterprises, and prove a most profitable undertaking. At this early stage of railway development in China many British financiers endeavored to secure participation in concessions but competition gradually disappeared and British official support exclusively extended to the most representative and influential syndicate. In 1898, the preliminary concession for the Shanghai-Nanking Railway was secured for the British and Chinese Corporation. Shortly after, the Peking, Syndicate agreement was concluded and overtures made for the construction of the Peking-Hankow line. China's breach of faith in ratifying the agreement with Belgium was used as the occasion of a formal demand for compensatory advantages to Great Britain. China, complying with this demand, consented on September 14, 1908, that the following railroads would be constructed by British interests on terms equal in advantage to those secured by Belgium:

1. Canton to Kowloon.
2. Shanghai to Nanking.
3. Chinkiang to Sinyang.
4. Hangchow to Soochow with extension to Ningpo, if necessary.

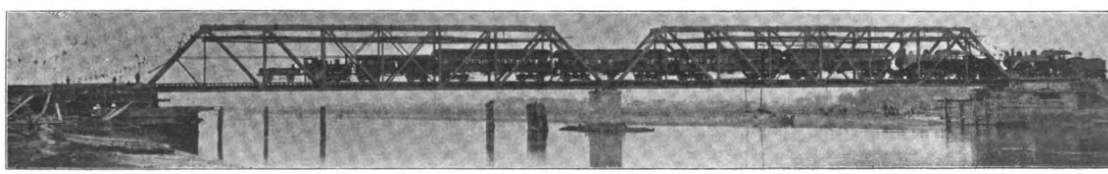
The British & Chinese Corporation, after many difficulties, succeeded in finally securing the Chinese Government agreement for the issue of bonds for the Shanghai-Nanking Road and the Kowloon-Canton Road and then turned their attention to the Soochow-Hangchow Ningpo line. But, by the time the British Corporation found a favorable opportunity for approaching this third problem, several years had elapsed and in the meanwhile two native companies had been organized for the construction and operation of the line between Shanghai and Hangchow. That part of the route between Shanghai and Fenching in the province of Kiangsu was taken up by the Kiangsu Railway Co., and the line from Fenching to Hangchow in Chekiang Province by a company under the style of the Chekiang Railway Co. An Imperial Edict of September 23rd, 1905, complicated the rights secured by the British Company by transferring the rights of construction to a provincial railway bureau and under this authority the work of the two companies was commenced with the official approval of the provincial governors. To the remonstrance of the British company to this infringement of their rights, the Chinese government promised to equitably adjust the matter, this promise terminating in China's agreeing to issue a loan of £1,500,000 through the British & Chinese Corporation for the construction expenses of the road on terms similar to the Tientsin-Pukow issue. This loan was strenuously opposed by the native companies through the provincial governors on the following grounds:

1.—As the British concessionaires did not do anything during the ten years after the conclusion of the preliminary agreement in 1897, the concession has now lapsed.

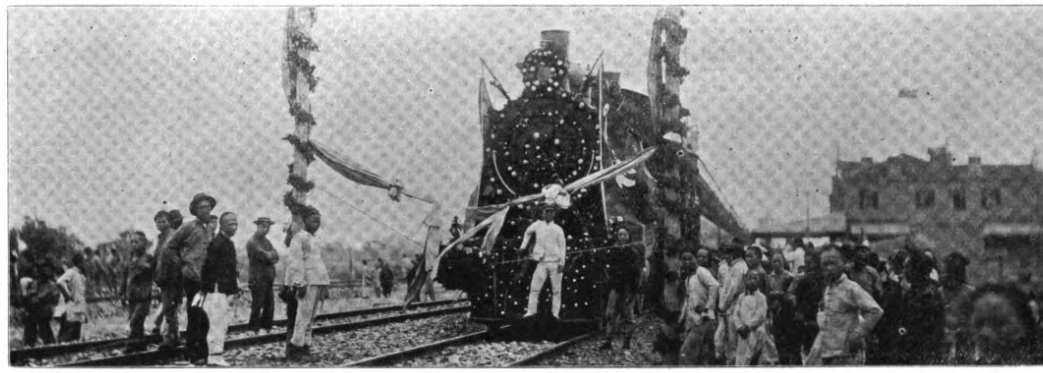
2.—In June, 1903, H. E. Sheng Kung-pao wrote officially to Mr. Brenan to the effect that if the concessionaires failed to commence work within six months then the preliminary agreement would be cancelled, but no reply was received from the representative nor was work begun at that time.

3.—The Chinese Railway Companies of Kiangsu and Chekiang have no need to float a loan from the said Corporation as was done for the proposed Tientsin-Chekiang trunk line for they have funds to build the Soo-Hang Ning railway themselves without assistance.

4.—The natives of Kiangsu and Chekiang obtained Imperial permission last year to construct the railway with purely Chinese mercantile funds.



KIANGSU RAILWAY:—ZIA-TANG BRIDGE



KIANGSU RAILWAY: OPENING DAY—AMERICAN LOCOMOTIVE AND CARS

5.—The Chinese Railway Company at Hangchow has now completed the construction of the short railway from the city to Kianghu (i. e. along the Chient'ang river) and opened it to traffic as part of the section in Chekiang, while the company at Soochow is laying rails for the Shanghai-Sungkiang portion and preparations are being made to push them forward as soon as possible.

6.—Although the proposed loan of £1,500,000 is to be guaranteed by the Provincial Governments of Kiangsu and Chekiang, yet, as both capital and interest will be repaid out of the profits of the railway in future, it is the same as placing it on mortgage.

7.—As the construction of railways in China with Chinese money is an important matter, the Peking Government should exert itself to retain full control, otherwise the consequences will be greatly detrimental to both the country and the people.

Great Britain, however, held China to the letter of the agreement that these roads were to be constructed by the British & Chinese Corporation, with British capital, preference to British goods, and supervision by British engineers.

Peking, confronted by the opposition of the provinces against interference in their internal affairs, and on the other hand, by the pressure of the British Government to compel it to live up to its agreement, true to its traditional policy, temporized, and instead of commanding obedience from the provinces, gave in to outside pressure and authorized the Loan as the easiest way out of an unpleasant dilemma.

The loan was made under the following conditions:—

Loan of £1,500,000 at five per cent interest per annum issued at 93.

Loan will be guaranteed by the Provincial Governments of Kiangsu and Chekiang pro portionately instead of by line in question.

The surplus of the revenue of the Imperial Railway of North China is also placed as security for the loan.

The name of the railway is changed to Shanghai-Hangchow-Ningpo Railway from the Soochow-Hangchow-Ningpo Railway.

The loan should be commenced to be redeemed after ten years and finally redeemed within 30 years, but after the eleventh year China may redeem the whole of the loan, but in that case two pounds ten shillings will be added per £100.

The chief engineer shall be an Englishman, to be engaged by China herself, on the condition that he must be recognized by the corporation.

The line will be built and controlled by the Chinese.

In case of buying foreign materials the British and Chinese Corporation will supply the same with five per cent commission, and the sum of £35,000 will be paid to the Corporation in two instalments and the Corporation will not audit the accounts.

The sum of £60,000 will also be paid out of the profits from the sale of bonds.

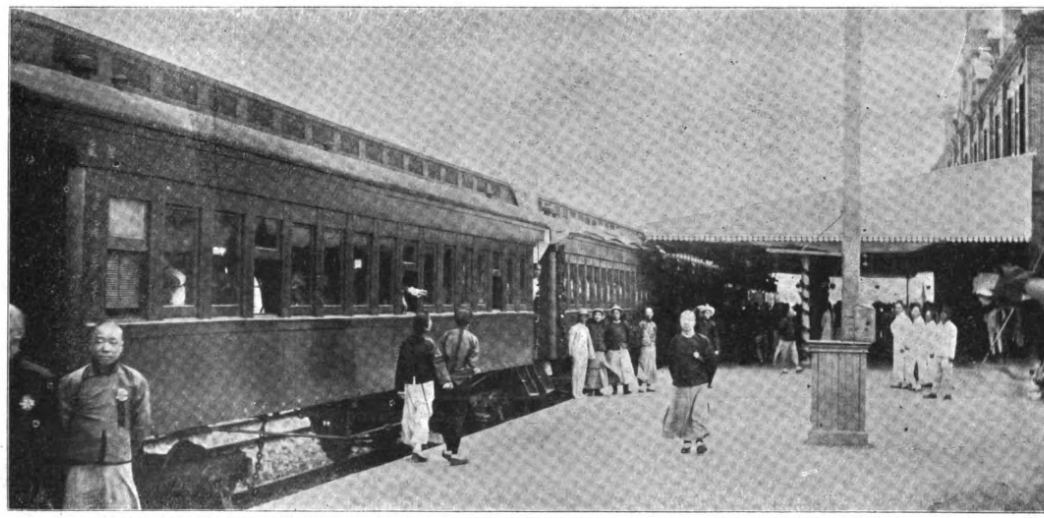
The natives of the two provinces shall be permitted to purchase the shares under similar conditions as foreigners.

The funds which have already been spent for the construction of those sections of this line by the people of these two provinces are to be added to the capital over and above the £1,500,000.

Interest will be paid out of the net profits of the line in future.

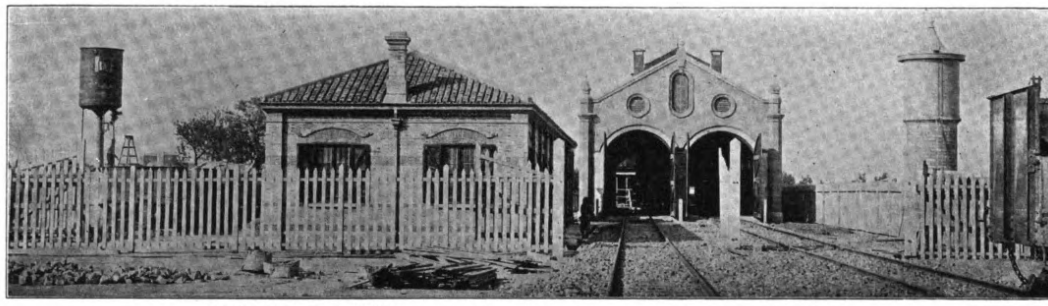
The flotation of this loan placed the Chinese Government in a peculiarly vulnerable position, as the agreement was entered into with the full knowledge beforehand that the proceeds could not be applied to the purpose for which they were intended, owing to the decided opposition of the provincial companies supported by a unanimous public sentiment. A deadlock was inevitable. The railway companies refused to use any part of the loan, or purchase materials through the British & Chinese Corporation. After considerable delays, the following compromise was entered into.

The Kiangsu and the Chekiang Railway Companies are, according to an Imperial Decree, both private commercial companies and will

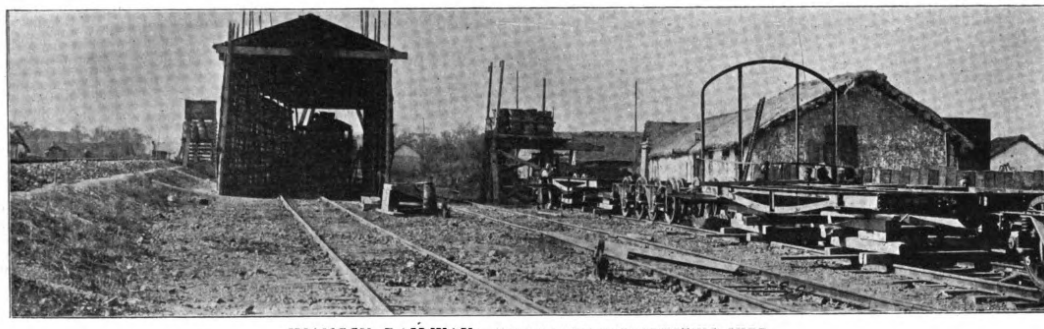


KIANGSU RAILWAY: STATION OF SHANGHAI ON OPENING DAY—AMERICAN (HARLAN & HOLLINGSWORTH) CARS

KIANGSU RAILWAY: OFFICES AND STATION AT SHANGHAI



KIANGSU RAILWAY: LOCOMOTIVE SHED AND WATER TANK AT SHANGHAI

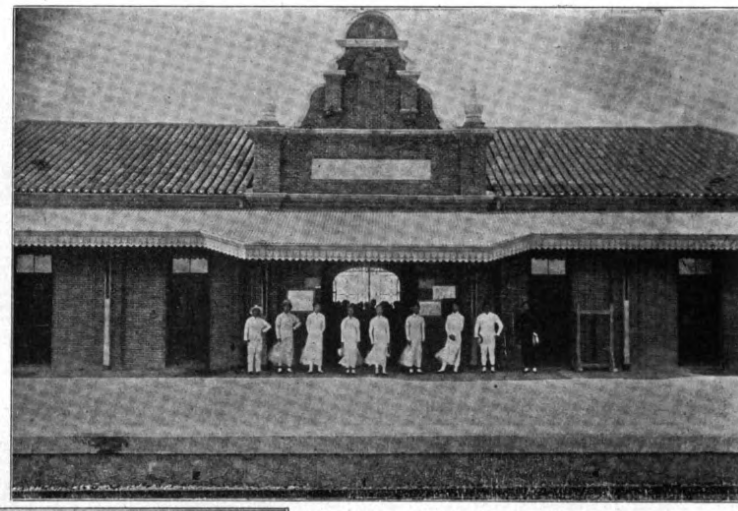


KIANGSU RAILWAY: TEMPORARY CAR ERECTING SHED

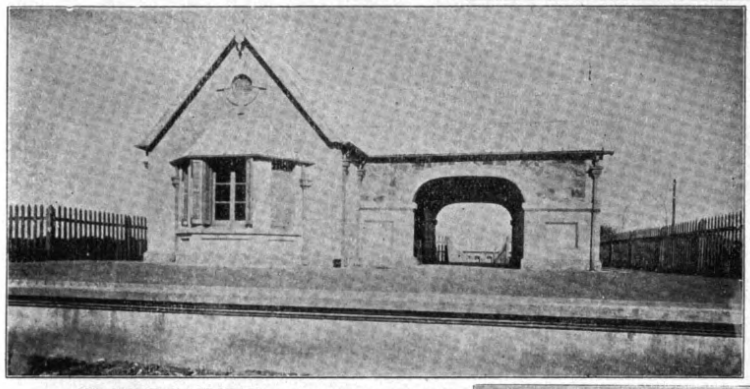
KIANGSU RAILWAY: SUNGKIANGFU STATION

be treated the same as other railway companies which are private commercial companies. The said two Companies will borrow from the Board of Communications a sum of about Taels 10,000,000, and at least Taels 7,500,000, which will be paid by the Board in two instalments, namely within seven months from the 6th March 1908 the sum of Taels 8,000,000 and the rest within twelve months from that date. This may be postponed till eighteen months but not more than twenty four months If the Board can not comply with this arrangement the agreement will be cancelled and the railway companies will repay the sum already in hands within six months and the same shall

not be delayed more than twelve months. The British and Chinese Corporation has nothing to do with the Companies and shall not interfere with them. The sum needed by the railway will always be received by the Companies from the Board after duly stating the items for which the sum is needed. In case more than Taels 200,000 are needed the same should be referred to the Board at least ten days previously. The companies will pay certain interest annually on 30th June and 31st December. When there is any surplus in the revenue of the railways the royalty of one twentieth of the same will be paid to the government but for all the expenses regarding the loan from the British and Chinese Corporation the Board will be solely responsible. The railway companies are simply responsible for the repayment of the principal and interest but have no responsibility to give securities. The term of the loan is for thirty years and in the first ten years the principal will not be repaid but the same will be commenced to be repaid from the eleventh year. After the eleventh year if the railway companies wish to repay at one time or at shorter intervals six months notice should be given and when this is repaid the agreement will be cancelled. When the work



KIANGSU RAILWAY: STATION



KIANGSU RAILWAY: FENGCHING STATION

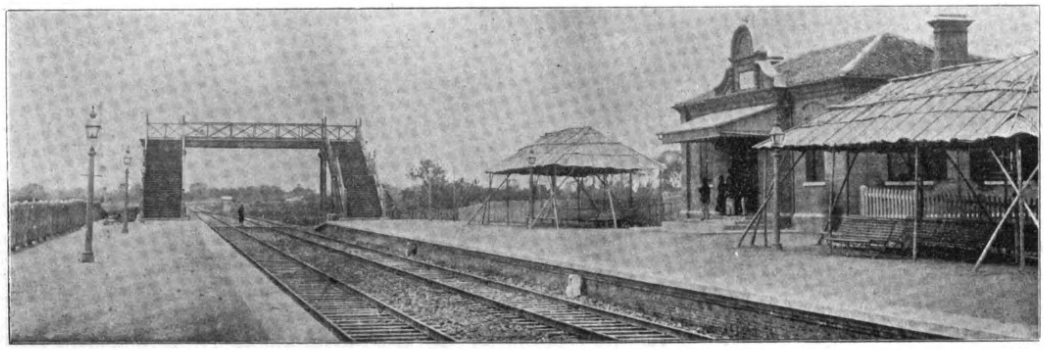
of the railways is complete the two companies will hand the interest for the last half year six months before to the Bank of Communications at Shanghai and after the last half of the tenth year the portion of the principal and interests to be paid should be deposited at the bank six months before and the interest on the same will be paid by the said Bank. The right of building and control of the Shanghai-Hangchow-Ningpo Railway is solely in the hands of the Kiangsu and the Chekiang Railway Companies and the Board will not interfere with the same. The Director General of the line will by order of the railway companies within six months of the date of this arrangement select an engineer-in-chief in England or amongst

KIANGSU RAILWAY: 3RD CLASS STATION

KIANGSU RAILWAY: STATION

the railway engineers in the employ of the Imperial Railway of China. Such engineer-in-chief should be under the command of the Director-General or his deputy. The contract with such engineer-in-chief will be made with the said Director General and the same will be the case in employing other railway experts. In case there is any dispute in connection with such contract the Board will not interfere but merely the contract will be the evidence of the case. It is always provided however that while the loan is in existence a British Engineer-in-Chief will be employed. In case of buying materials through the British and Chinese Corporation the Board of Communications will arrange for commission and therefore the railway companies need not pay such commission. In case the railway companies will not buy materials through the said corporation the commission should be paid by the railway companies. The Bank of Communications will be the Bank of the Board and the funds should pass through the hands of the Bank.

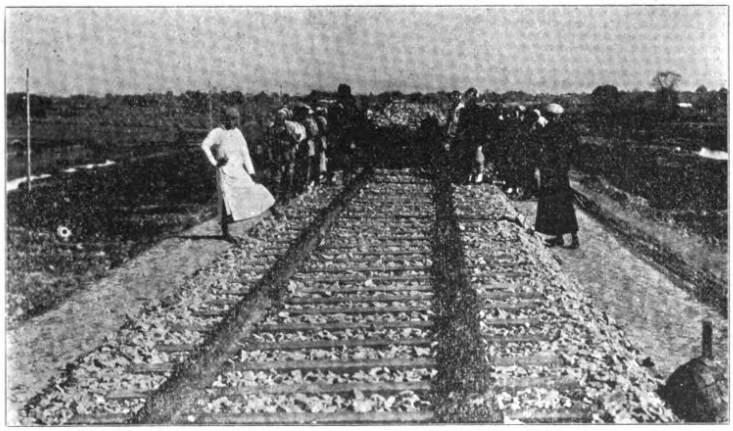
The Kiangsu Railway Company was organized with a capital of $3,000,000 Mexican to operate the road between Shanghai and Fengchin, a distance of 38 miles. The Chekiang Railway Co. operating the road from Fengchin to Hengchow, a distance of 78 miles, was originally organized with a capital of $5,000,000, all paid up. In June, 1908, in order to provide funds for the extension to Ningpo and the construction of the Chien Tang Bridge at Hangchow,



KIANGSU RAILWAY: TUNG-HUA STATION

an ncrease of capital of $15,000,000 was authorized, to be paid in 5 yearly instalments. Only Chinese were permitted to subscribe or hold stock and the number of shareholders is reported to be over 53,000, about 40,000 of whom are coolies, farmers and small tradesmen, some holding as low as $5.00 in shares. The first call on the new issue of $3,000,000 is reported to have been paid in. Up to the recent completion of the two roads, both companies had ample funds at their disposal without recourse to the British loan to carry out all their work and purchase all materials. Of the £1,500,000 loan, the Board of Communications has so far allotted Taels 500,000 to the two companies at 5½% interest, charging 7% of the amount as premium. Although the loan provided for the employment of a British engineer and the purchasing of the materials through the British and Chinese Corporation, the Chekiang Ry. Co. declined to avail themselves of the purchasing agents' services and in consequence has had to pay the sum of $250,000 Mex. in lieu of the 5% commission stipulated in the Loan Agreement. The British engineer appointed to the Chekiang line construction did not report for duty until the 78 mile section of the road terminating at Hangchow was completed by Chinese labor and capital. Under a new agreement he will be retained to super-

KIANGSU RAILWAY: ENGINEER'S STAFF

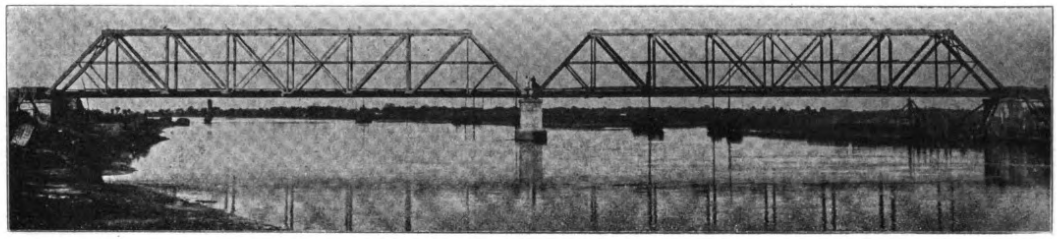


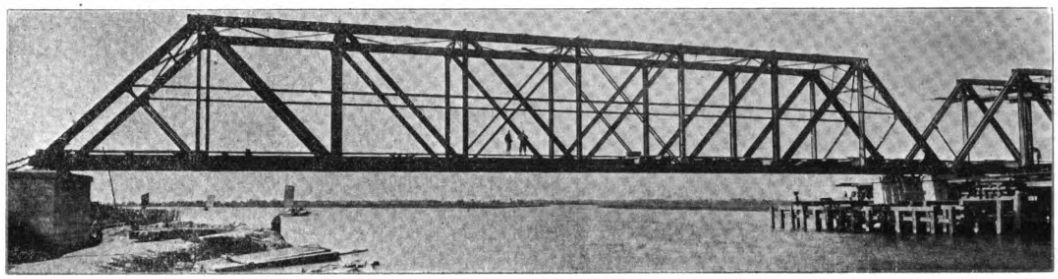
KIANGSU RAILWAY: A WELL-BALLASTED ROADBED

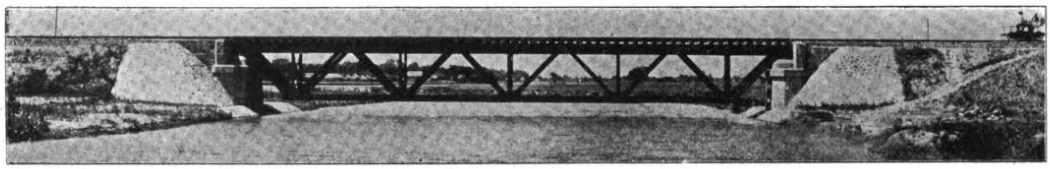
intend the construction of the extension from Hangchow to Ningpo at a salary of $16,000 gold per annum.

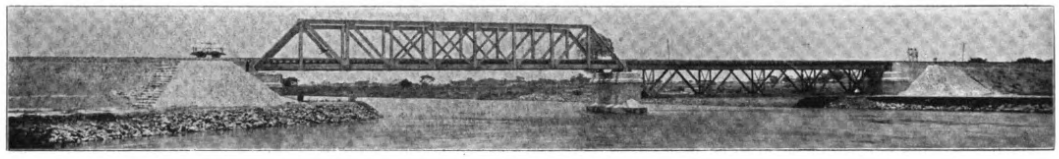
The Chekiang Company has so far been allotted about $450,000 Mexican of the British Loan but, not needing it, has loaned the money to Chinese Banks at a higher rate of interest than that exacted from them by the Yuchuanpu (Board of Communications). The president and vice president of this line receive no salary and the other officials are paid ridiculous low wages. Mr. T. C. Pu, the secretary and chief engineer under whom the road has been constructed, is a graduate of the Civil Engineering School of the University of California, Class of 1907. Although fresh from college and with little practical experience he is quite capable. His salary as chief engineer is $2700 gold per annum. With plenty of funds, there has been comparatively little waste in construction, although the management is open to some criticism for the lack of sound judgment in purchasing supplies. Locomotive engineers are paid from $60 to $80 Mex. per mensem, station masters, $18 to $36, track foreman $9.40, and laborers about $8.00. The actual cost has been less than $26,000 Gold per mile including cost of earthwork, tracks, rolling stock, stations and all charges. The Chekiang Line has a total of 144 steel girder bridges, supported on concrete abutments, and 157 culverts crossing small canals and ditches. All of these girders were purchased from the American Bridge Co. of New York through their local agents. The longest bridge on this road is a 60 ft. span with an average of 45 ft. The country traversed by both the Chekiang and Kiangsu Railways is a net work of canals and waterways, the natural highways of commerce and trade in this low lying section. The closing or narrowing of those streams by cofferdams to the detriment of the great junk and river traffic was prohibited by the authorities so in many instances the railway engineer put into practice the old scheme of building one abutment at the water's edge, the other on dry land to one side, and then after completion, the shallow canal was diverted from its old channel to the new ones between the abutments. There is nothing remarkable about this practice although the *London Times* Correspondent employed it as an argument to criticize the professional ability and capacity of the engineer. The same practice was resorted to in the construction of the Shanghai-Nanking Railway. The correspondent of the *London Times* says:

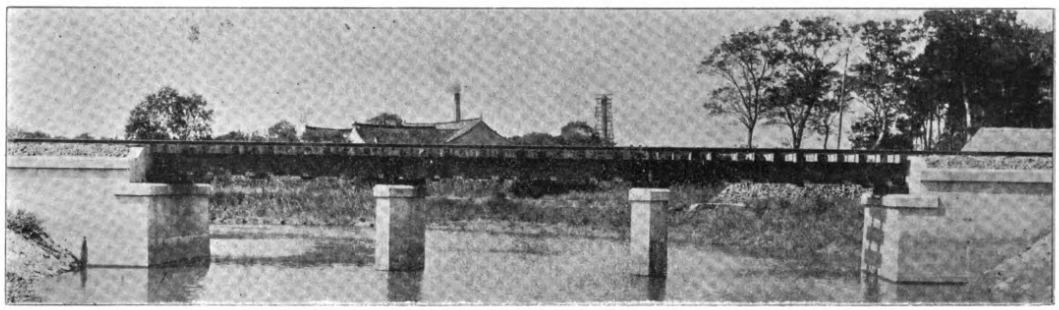
"Where there was difficulty in bridging a stream, the Chinese built the bridge on dry land and then dug a canal and diverted the waterway under the bridge, both the entrance





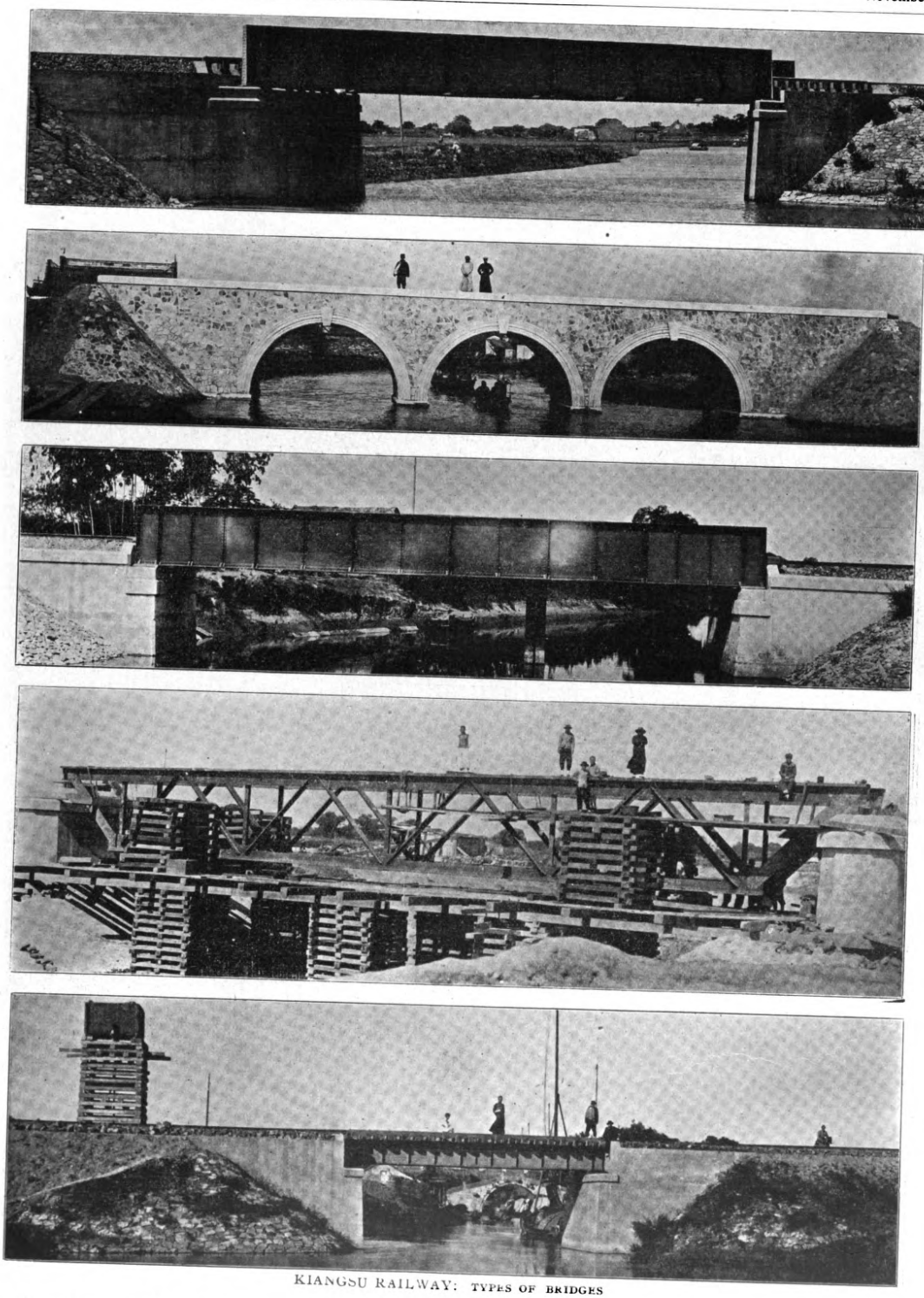






KIANGSU RAILWAY: TYPES OF THE MUCH CRITICISED BRIDGE WORK

KIANGSU RAILWAY: A GRADE CROSSING

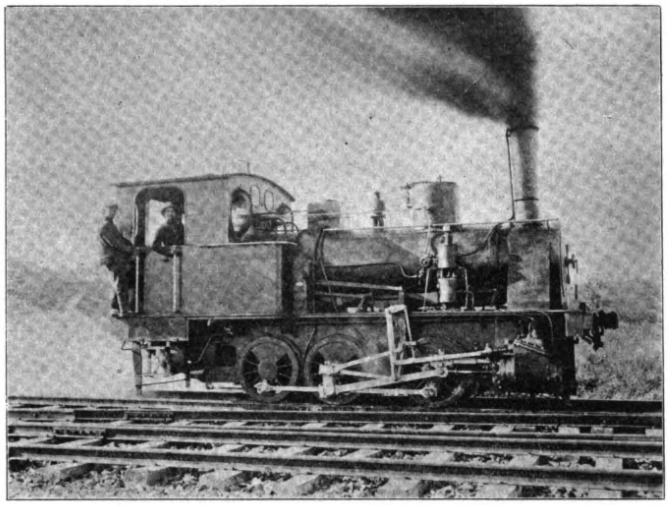


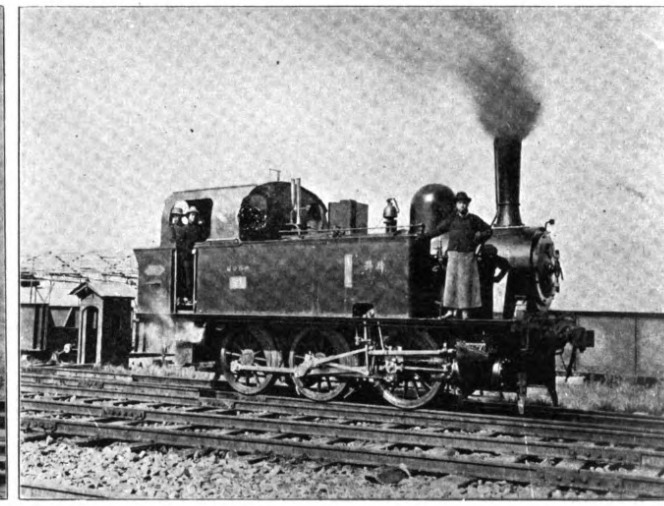
KIANGSU RAILWAY: TYPES OF BRIDGES

to the diversion and the exit from it being literally at right angles to the natural direction of the stream." The mere fact that such practice could be resorted to is an indication of the innocence and sluggishness of the water, and as nearly all are tidal canals, it rather reflects on the good judgment of the engineer than otherwise as the best method of keeping the narrow channels open to junk traffic during the construction of the road.

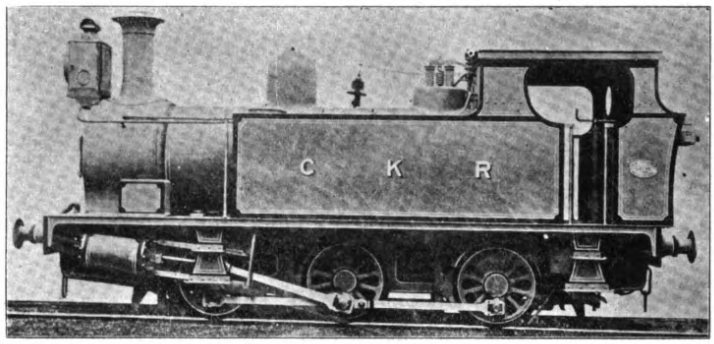
The ties on both lines were purchased in Japan, and while not of the highest quality,

CHEKIANG RAILWAY ROLLING STOCK





GERMAN-"BORSIG"-LOCOMOTIVES

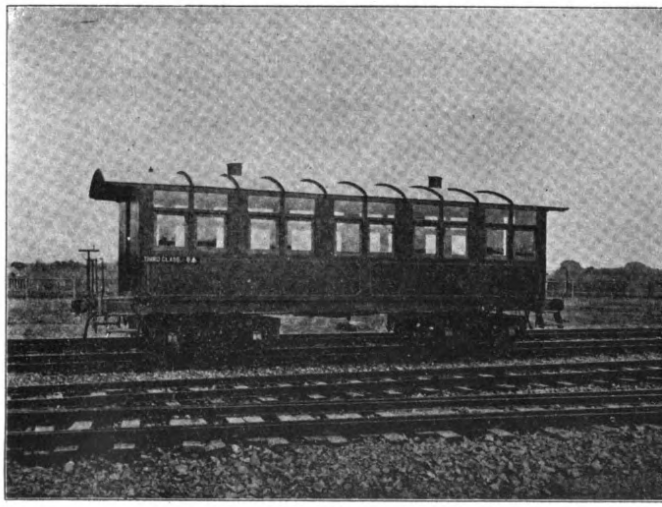


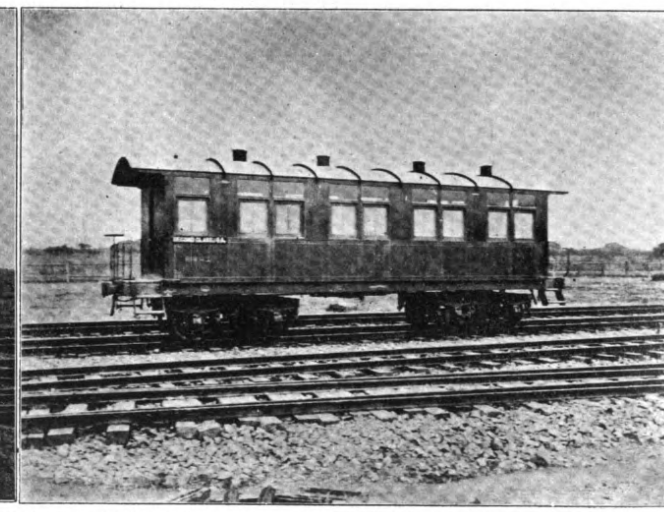
BRITISH SADDLE TANK LOCOMOTIVE: HUDSWELL CLARK & CO., MFGRS., SOLD THROUGH MESSRS. BRIGHTEN, MALCOLM & CO., LTD.

are of standard sizes 8 ft.×8″×6″ spaced 2 ft. 4 in. between centers. These ties are estimated to have a life of 7 years under conditions existing in this section of China. They cost delivered $1.05 Mexican each. The ballast is limestone and sandstone secured from quarries near Hangchow with rail connections with the main line. The roadbed is ballasted for a width of 10 feet and is 6 inches deep. The cost delivered at the track was about 60 cents Mexican or 25 cents per cubic yard.

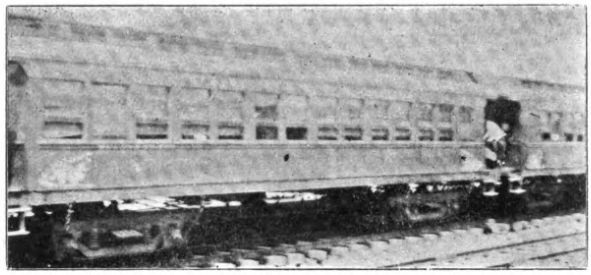
The entire line from Shanghai to Hangchow is 116 miles long. The Chekiang section has in addition 36 miles of sidings. The line is single track, standard gauge and the rails of 75 lbs. to the yard, of Standard Section, 10 meters long, laid with even joints. These were manufactured at the Hanyang Iron & Steel Works, opposite Hankow.

The Chekiang Railway has 15 depots and the Kiangsu line 10. The stations on the former line are not all completed and in some instances only temporary matsheds are in use. Wood has been employed for platform sheds. On

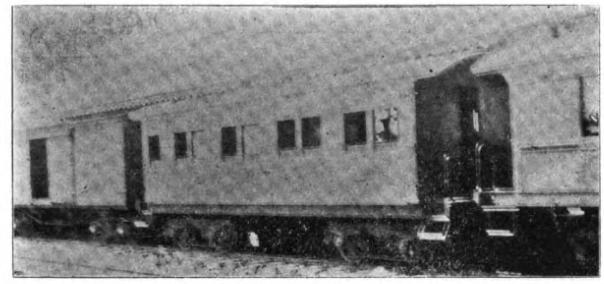




BRITISH SECOND & THIRD CLASS PASSENGER COACHES, FROM RENSHAW & CO., SUPPLIED THROUGH MESSRS. VON DURRING, WIBEL & CO.



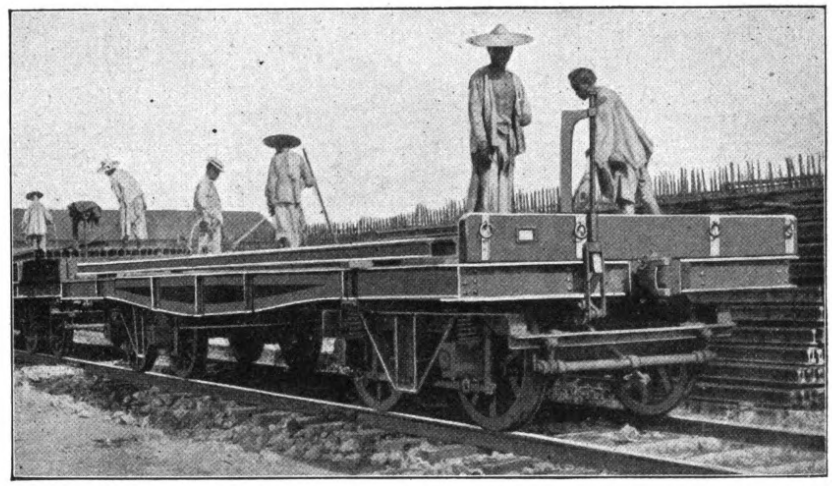
CHEKIANG RAILWAY: PULLMAN 1ST CLASS PASSENGER CARS SUPPLIED THROUGH MESSRS. MITSUI & CO.



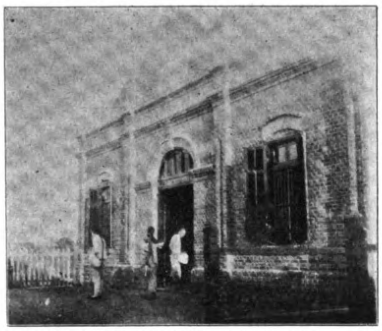
CHEKIANG RAILWAY: BRITISH AND AMERICAN CARS

the Kiangsu Line, commencing with the fine commodious central depot and general offices at Shanghai, all the stations are of brick or stone, attractively and substantially built.

The Kiangsu Line has 48 bridges, exclusive of culverts, some stone arches and some steel girder type. The longest bridge is at Ziatang with a length of 440 ft. in two spans. There are also bridges at Yuen Zia-ching, 400 ft. in span, Lu Tienwan, 200 ft. in span, and Pei Ya



FLAT CAR ON CHEKIANG RAILWAY

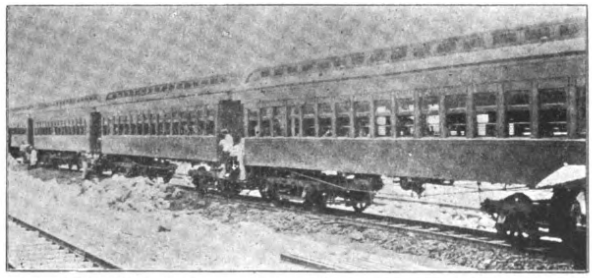


CHEKIANG RAILWAY: 3RD CLASS STATION

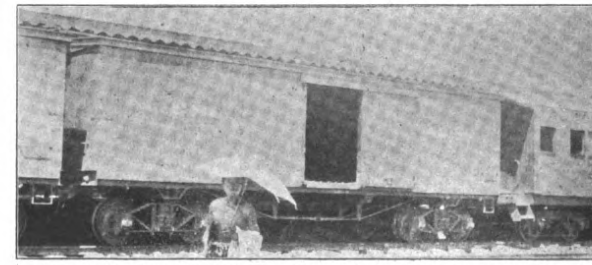
hing, 100 feet in span. The whole capital used did not exceed Tls. 2,000,000, of which Zia Tang required the greater part, its construction being most difficult. It is a branch of the Whangpoo River, its current very rapid and its depth over 40 ft.

On the Kiangsu Road the rolling stock is American. The first, second and third class cars were manufactured by the Harlan & Hollingsworth Co. of Wilmington, Del., according to specifications submitted. This equipment was sold through the firm of Carlowitz & Co. These cars and trucks were ordered from America the same time as the engines. The latter, from the American Locomotive Company, were ordered to meet the requirements of the Chinese Railway Board's rule that the height from the top of the rail to the center of the drawbar or coupling should be 3′ 7″. The cars were ordered according to American practice which stipulates a height of 10 inches less than the above. To the American car and American truck has been fitted the standard Chinese wheel, 42″ in diameter, or 9 inches more than the American standard. To give clearance to this wheel the car bodies have been blocked up at the kingbolt and on the sides about 9 inches. The effect is a botch and of course every one shifts the trouble on the poor American rolling stock when the real cause lies with those who ordered the material.

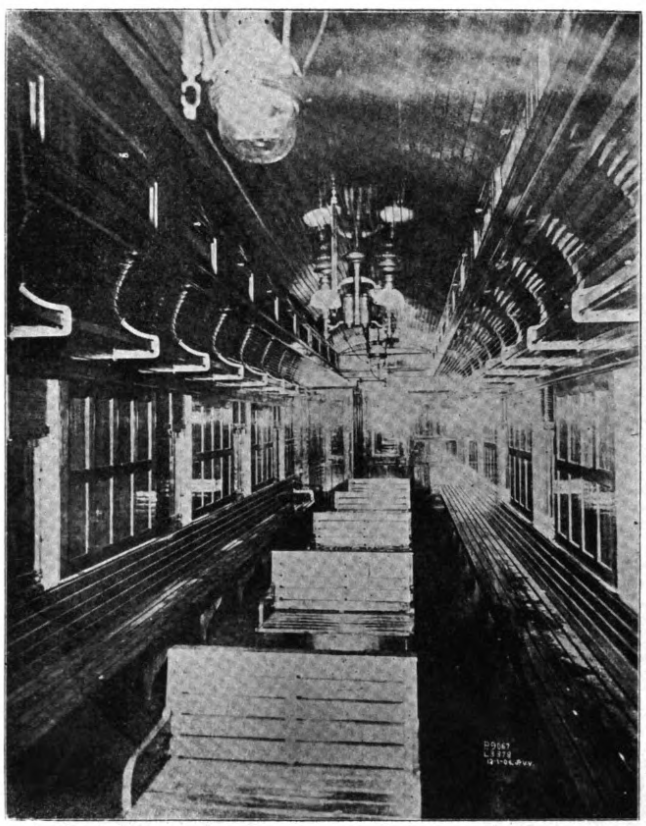
The Chekiang Line is a menagerie of rolling stock. Nine different types from various makers are doing duty on this section. Disgruntled critics say this variegated assortment of cars is due to the fact that each of the directors has the right to order in turn the material for the road and does so according to his fancy and ideas of "official commission." The officials of the road answer that they knew what they were doing and purposely collected the various types to try them out and determine for themselves just what type of cars and locomotives are best suited for their requirements. This equipment will surely assist them in arriving at a fair decision of what their future requirements will be, for they have been strictly impartial in bestowing their orders. We find, at first, two Borsig German Tank Locomotives purchased through the firm of Von Duering Wibel & Co. of Shanghai, at an approximate cost of $8,200 gold each, then 6 British Tank Locomotives from the Hudswell Clark factory were secured through the firm of Brighten, Malcolm & Co. at $9,720 gold each, and lastly 4 Mogul type engines from the American Locomotive Co. were purchased at $13,600 each through the firm of Mitsui & Co. Passenger coaches in operation number 41. Ten of these cars were built by Renshaw & Co. of England and 11 more have recently been added from the Pullman Works at Chicago. Of 203 freight cars, some are from Orenstein



KIANGSU RAILWAY: AMERICAN (HARLAN & HOLLINGSWORTH) PASSENGER CARS



CHEKIANG RAILWAY: AMERICAN BOX CARS (AMERICAN CAR AND FOUNDRY CO.



CHEKIANG RAILWAY: INTERIOR OF 3RD CLASS COACH, BUILT BY THE PULLMAN CO. OF CHICAGO

CHEKIANG RAILWAY: FIRST CLASS PASSENGER COACH, BUILT BY THE PULLMAN CO. OF CHICAGO

& Koppel, some from Renshaw, some from Tongshan, and the rest from the American Car & Foundry Co. The Company is now constructing cars at its own shops at Hangchow where four have already been turned out and there are eight building.

It is too early to direct criticisms against the management for purchasing the various types of rolling stock. At present all cars and locomotives look alike to the average Chinese Railway official. Every manufacturer's agent in the world is telling him that his products are the best and to beware of the other fellow. Quality is subordinated to cost and commission, and if they take it into their heads to determine for themselves what they want in the future, promiscuous purchases may be justified at this time. In three years from now the Chekiang Railway Directors will have become educated through actual experience and know better what they desire and if not trammelled by the provisions of a Loan Agreement they will know what cars to order, be they British, German or American. Until such time, it is unfair to criticise their rolling stock, however poor some of it undoubtedly is. They got what they ordered and paid for and no more. The chief engineers of both the Kiangsu and Chekiang lines already appreciate the errors committed and hope to do away with them in future.

On the Chekiang Railway there are no grades of more than 2-10 of 1%, and no curves of more than 3 degrees: labor is the cheapest in the world, and there is only about $2,200,000 gold invested in the property. At the outset, the passenger receipts alone between Kashing and Hangchow, a distance of 60 miles, averaged $3000 Mexican per diem. With the road completed and through service as now obtains from Shanghai to Hangchow these receipts should ascend to $4000 per day, or a total of $550,000 per annum. Allowing the high rate in China of 30% for operating expenses and charges, this road will pay at least 7% on its invested capital the first year.

Taking everything into consideration there is every reason to believe that in ten years the road will prove as remunerative an enterprise as the Imperial Railways of North China. The extension of the road to Ningpo is now occupying the attention of the officials, but progress is checked until a solution is found to the present conflict of authority between the Central Government and the provincial gentry. Peking has attempted a solution of the tangle by appointing the director of the Chekiang Railway to the post of Provincial Judge of Yunnan. With him out of the way, the Central Government feels that the situation will clear, but the gentry of the Province have protested against his transfer, and the end is still far off.

This Railway Company has just received a consignment of freight cars from the firm of Orenstein & Koppel of Berlin. These cars which are built for a 35-ton load differ from the cars previously used on this line by their having steel plate bogies and steel plate springs instead of the Diamond Arch Bar Bogie with coil springs.

This new type, though possibly more expensive, is a very substantially constructed car. Another large order of box cars from the American Car & Foundry Co. of New York, placed through Mitsui & Co., are also in operation. In view of the recent somewhat unfavorable comments on the rolling stock employed on this railway, these new orders indicate that the Railway authorities are perfectly alive to the necessity of adopting improvements. Eventually, when the new equipment is working talk about inferior rolling stock will gradually cease.

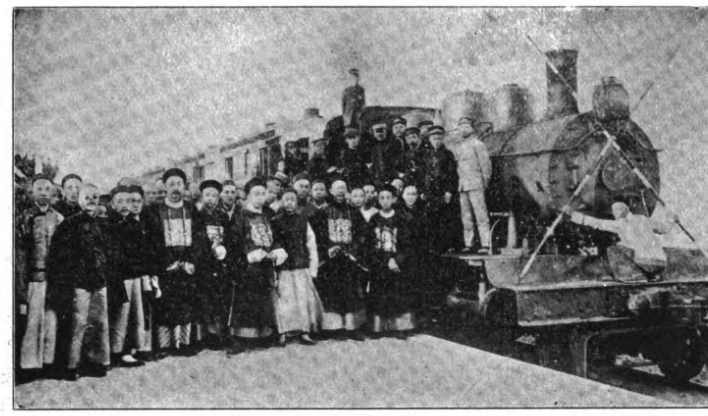
KIANGSU RAILWAY: RIVER TERMINUS NEAR KIANGNAN

SWATOW-CHAOCHOWFU RAILWAY

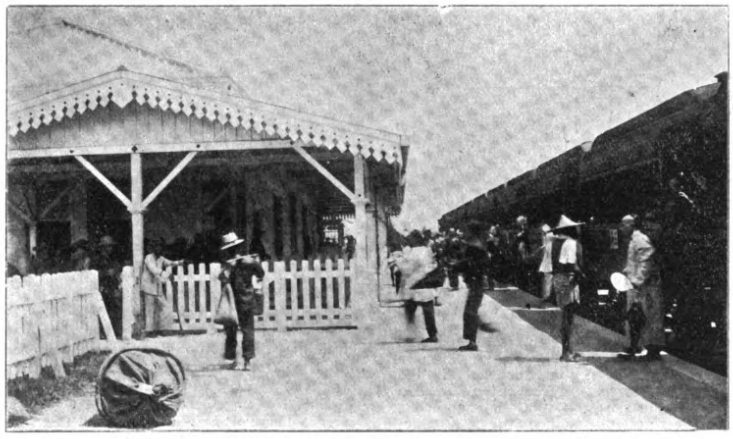
The Chao Chow & Swatow Railway Co., Ltd., is the first distinctly Chinese railway organization which has succeeded in building and operating its road. The necessary concession was granted in 1903 to one Chang Yu-nan, a native merchant who made his fortune in Java, and work commenced in 1904. The Company is registered under the Hongkong ordinances, and a director, Mr. Ng Li Hing, resides in that colony and looks after its interests there. The head office is located on Chee On St. in Swatow. It is capitalized at $2,000,000 Mex.

The construction work was carried out by Japanese engineers, under the direction of the well known firm of Mitui Bussan Kaisha. The road was opened to traffic throughout the entire length on the 16th of November 1906.

It is almost 24 miles in length, and has four stations besides the terminals. The gradients are low, and curves are comparatively few. Throughout its whole course the line is practically level, with no deep cuttings. The only bridge of any size spans the north, or Ampou branch of the Han river, about two miles from Swatow. The greatest difficulty encountered was the number of small streams and water outlets which has to be spanned by culverts



SWATOW-CHAOCHOWFU RAILWAY —OPENING CEREMONIES

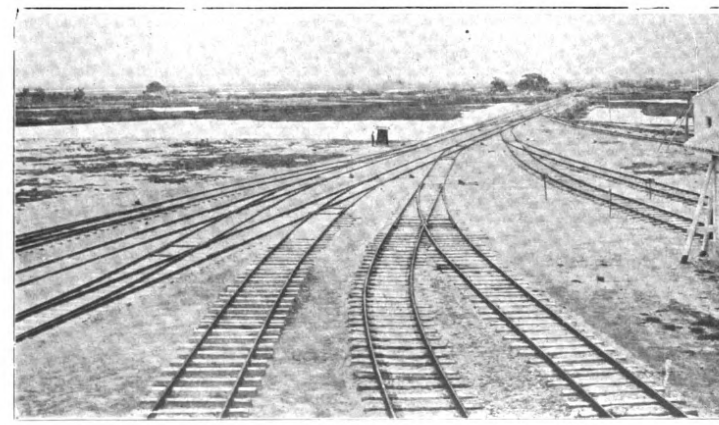


SWATOW-CHAOCHOWFU RAILWAY.—SWATOW STATION

I.R.N.C.—LANCHAU BRIDGE

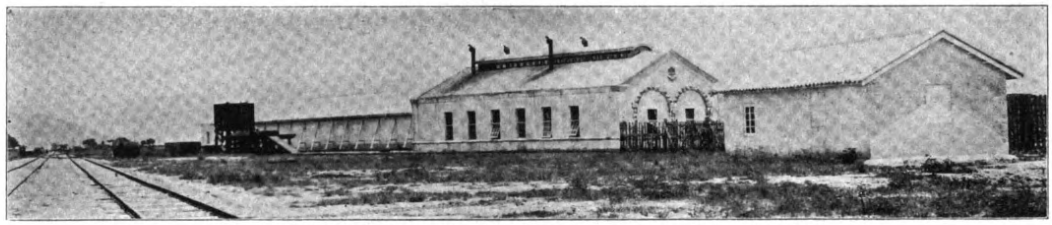
The embankment is mainly composed of field mud dug up close to the line, and ballast is sparingly used. Japan hardwood sawed ties and American steel rails, angle bars, and spikes were used. The three 54-ton locomotives, constituting the motive power, are of American manufacture. They bear, however, a conspicuous name plate in English and Chinese, setting forth the firm that sold them. The coaches, of which the road has twenty-four, are built on the corridor plan, and were constructed in Japan. They will each seat fifty passengers. The first class coaches are fitted with seats that imitate the American patterns, and are upholstered in imitation leather. The second class coaches have wooden benches. The couplers are of the American type. A standard train consists of fourteen coaches and a guard's van. The latter is the only one provided with brakes, the American air brake on the locomotive being relied on to handle the train. Forty-eight small freight cars complete the list of the company's rolling stock. This road is the first in China to be built with Chinese capital.

Previous to the formal opening of the road the trains had been running for eight days (three a day each way), and the daily average of pas-

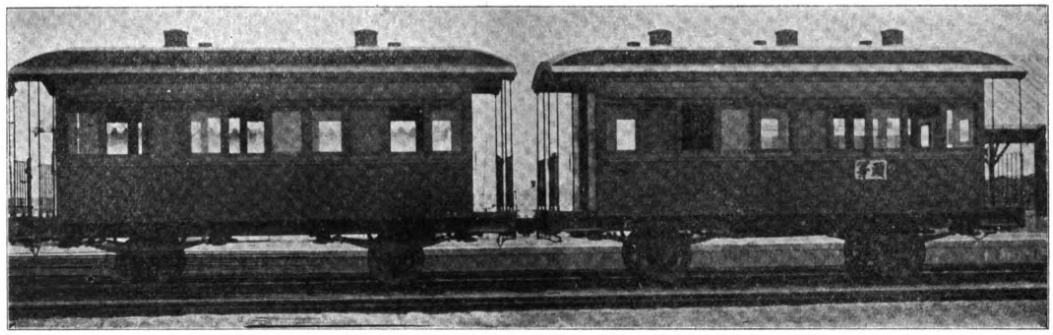


SWATOW-CHAOCHOWFU RAILWAY.—YARDS AT SWATOW

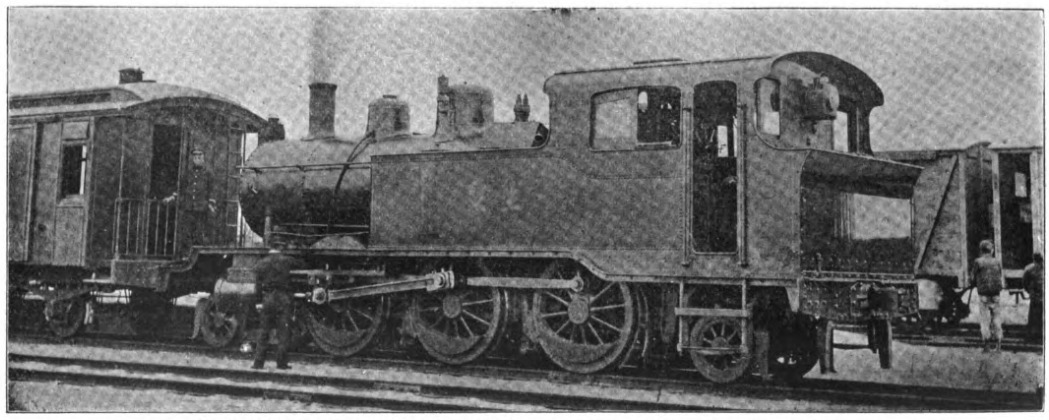
SWATOW-CHAOCHOWFU RAILWAY.—STATION AT SWATOW



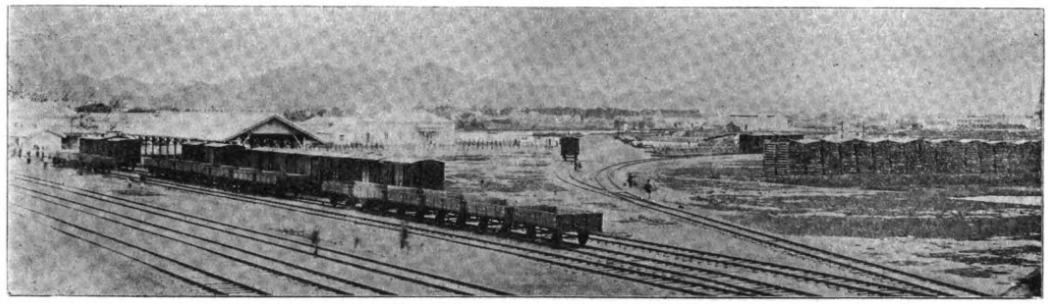
SWATOW-CHAOCHOWFU RAILWAY.—LOCOMOTIVE SHED AND SHOPS



SWATOW-CHAOCHOWFU RAILWAY.—FIRST AND SECOND CLASS PASSENGER CARS

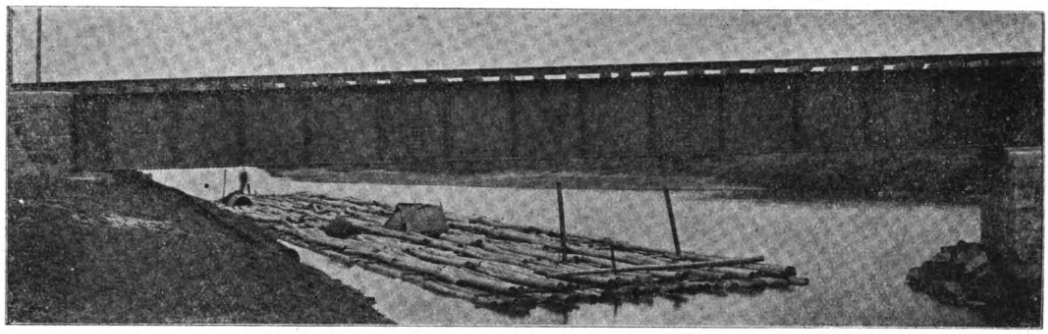


SWATOW-CHAOCHOWFU RAILWAY.—AMERICAN SADDLE TANK LOCOMOTIVE



SWATOW-CHAOCHOWFU RAILWAY.—YARD AT SWATOW

SWATOW-CHAOCHOWFU RAILWAY.—YARD AT SWATOW



SWATOW-CHAOCHOWFU RAILWAY.—GIRDER BRIDGE ON LINE

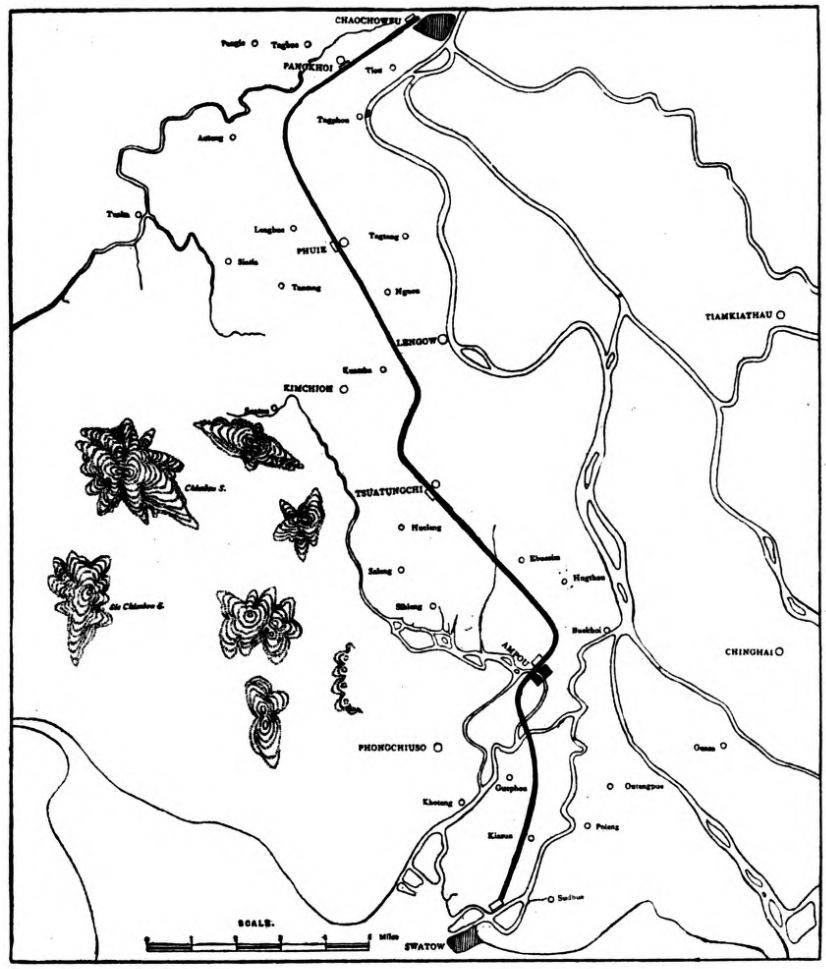
SWATOW-CHAOCHOWFU RAILWAY.—GIRDER BRIDGE ON LINE

sengers carried was 2,000. The fares per ride are 67 cents gold for first class, and 27 cents for second class. The 30 miles are made in about one hour and thirty minutes.

The engineers and conductors and the train dispatcher are Japanese, but the ticket collectors on the trains and all other employees are Chinese. The dispatching is done by telephone.

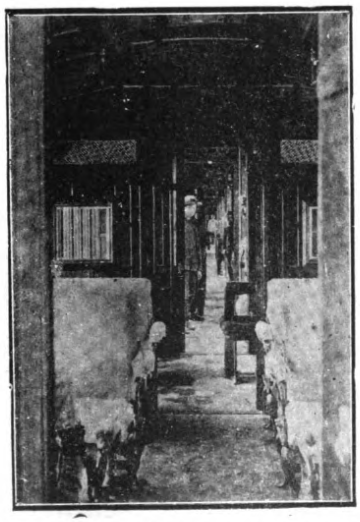
The completion of this line caused a great inflation of local land values, but prices are now again normal. A considerable number of Japanese experts are still employed on the railway, and it is due to their efforts that the line is run in a practical manner, according due consideration to the wants of the native passengers.

It was proposed to extend the line to Iki, the object being to build up a freight carrying trade from that district. It was also intended to bring the line direct to the harbour shore at Swatow, but owing to the great expense of filling in the foreshore, the project has been dropped for the time being. Steps have been taken to survey the proposed Whampoa-Amoy line, and the country about Hoifung, Lukfung, Wailai, Puning and west of Kityang, has also been surveyed. It is intended to bring the line east of Chaochowfu to Huangkang on the coast, and from there to Chaoang and Amoy.

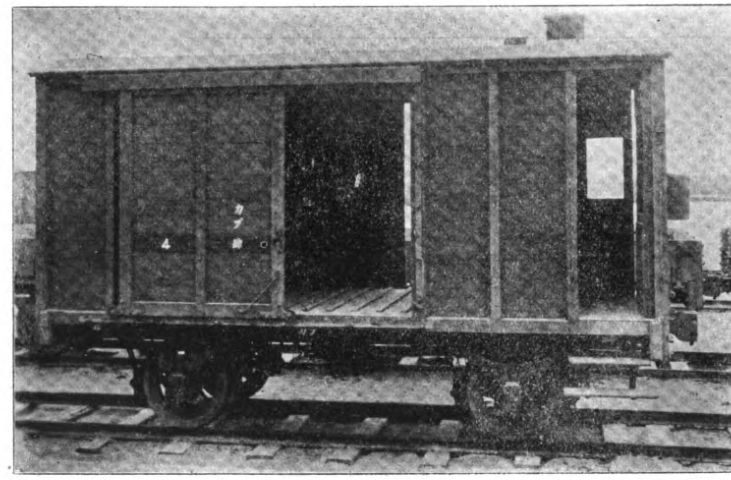


Reprinted from the Far Eastern Review

MAP OF THE SWATOW-CHAOCHOW-FU RAILWAY



SWATOW-CHAOCHOW-FU RAILWAY.
—INTERIOR OF FIRST CLASS COACH



SWATOW-CHAOCHOW-FU RAILWAY.—TYPE OF BOX CAR SUPPLIED BY MITSUI BUSSAN KAISHA

THE SUNNING RAILWAY

This line, which when completed will be approximately 55 miles in length, and connect Yung Yik, a point on Sunchong Creek, about seven miles from the treaty port of Kong Moon (situated 88 miles from Hongkong), with a harbor site known as Sam Kap Hoi, South West of Macao via Sunning, was opened to traffic for a distance of 40 miles in June of this year, and is the first railway financed, constructed and operated by Chinese in any part of the Chinese Empire. It runs through Sunning district, one of the most populous and prosperous sections in South China with a population of about 1,000,000 natives most of whom have been in contact with foreign influence and are large purchasers of foreign goods.

The company was organized with a capital of $2,660,000 (Mex) of which the sum of $2,000,000 was furnished by Chinese living in America and the balance subscribed by the Chinese merchants of Hongkong.

The first section opened for traffic was fifteen miles in length and connected Kung Yik with Sunning City. The formal opening of this section took place on January 6th, 1908. In June of the present year the line was opened for an additional section of 25 miles and work is progressing on the construction of the balance of the road.

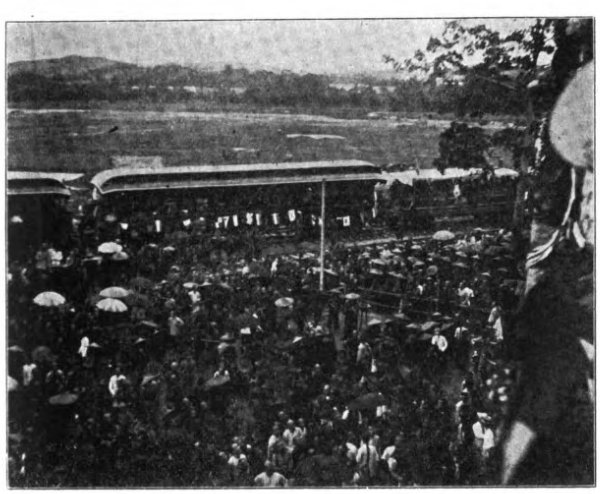
This line is of standard gauge (4 feet 8.5 in.) and is laid with 60 pound steel. The steel was purchased in Belgium and Germany and the tie plates, which are used on the curves and on every third tie on tangents, were purchased in Germany.

The rolling stock comprises six American and three German locomotives. One of the American locomotives is a small switch engine and the other five also from the Baldwin Locomotive Works, Philadelphia, are divided into two of 60 tons each and three of 65 tons each. The German locomotives are of the usual continental type with coal bunkers, saddle tank, short wheel base and outside connected drivers. One of these is 40 tons and two of 25 tons each.

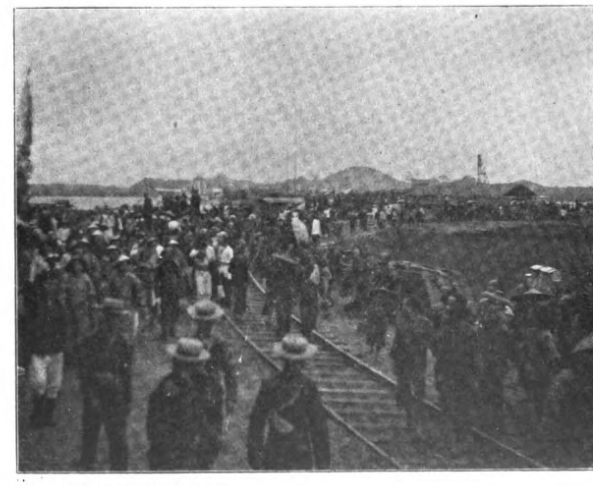
The road is equipped with eight first class coaches of American corridor type, fifty box and fifty flat cars. The flat cars are of American design and of 30-ton capacity each. A number of the box cars are fitted with windows and seats and are being utilized as second class coaches. All of the rolling stock is equipped with American air brakes.

The European type of side buffers are used and the couplers are of screw and ball type with link and hook connections to the draft gear. It was found, however, that the buffers as utilized were not suited to conditions and not a few were broken off on the curves on the initial trip over the line.

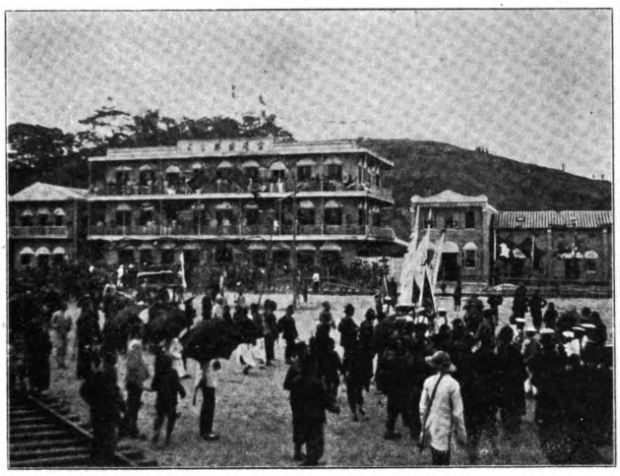
The coaches referred to were built by the Harlan & Hollingsworth's Company of Wilmington, Delaware, and the flat cars by Fitz-



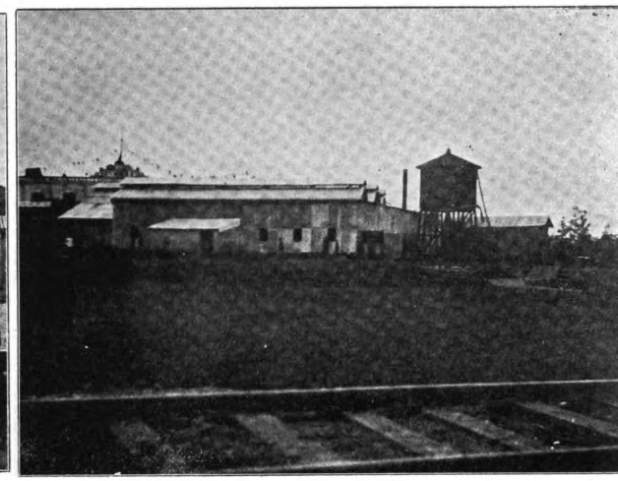
SUNNING RAILWAY.—SCENES ON THE OFFICIAL OPENING DAY



SUNNING RAILWAY.—SCENES ON THE OPENING DAY



SUNNING RAILWAY.—OFFICES AND MAIN STATION AT SUNNING



SUNNING RAILWAY.—SHOPS AND TANK AT SUNNING

hugh Luther & Co. of Chicago and the Middletown Car Works of Middletown, Pa.

The cost of the line is variously estimated from $30,000 mex. to $34,000 per mile. Most of the gradients are comparatively low with the exception of one or two curves of heavy grade. To avoid tombs and graveyads, the line was laid out with some very sharp curves and with no tangents of any considerable length. The culverts are of stone and otherwise of cast-iron pipe, but many of them are of open design and crossed by open timber trestles. The timbers used are China fir and Borneo and Straits Settlements hardwoods. The sleepers were also made from hardwood from the Straits and all this timber was treated to protect it from the ravages of the white ant. Some of the trestles are of considerable length and were built with pile bents and timber spiked and bolted. Temporary mat sheds took the place of stations during the early part of the traffic, but at Kung Yik and at Sunning City the stations are very commodious. The one at Sunning is a three-story building and includes the general offices of the company and a restaurant. The company intends to maintain an uptodate hotel at this point as well.

The line is not provided with many switches or sidings for the reason that most of the traffic is through passengers and freight. One siding at a station is the rule and an extra siding the exception.

At Sunning and Kung Yik yard ample accommodations are provided, although at Sunning the curves are generally very sharp. American water tanks have been erected at Sunning and Kung Yik.

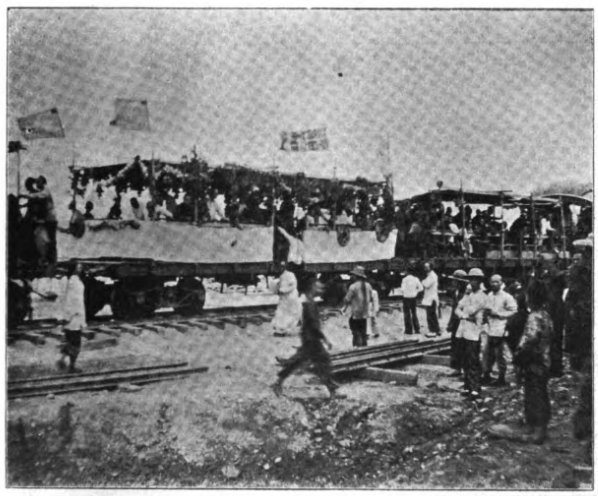
The company has installed a complete system of telephones throughout. Swedish instruments are used and have given satisfaction.

In the construction work American dump cars and tools were utilized almost entirely and had it not been for the boycott at the time of construction it is not improbable that American manufacturers would have secured the orders for all the construction supplies and equipment.

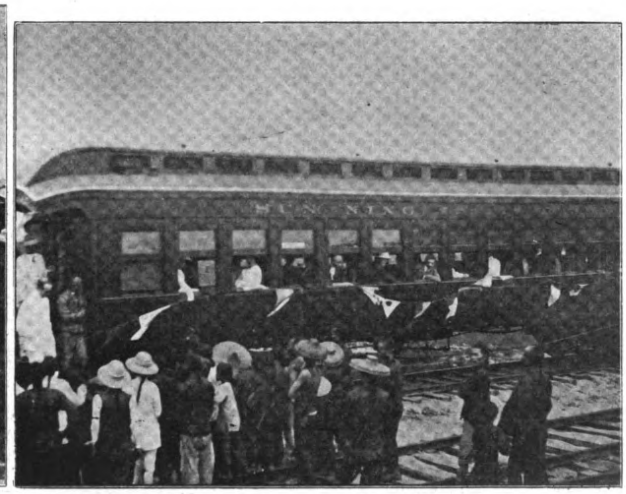
The earthwork was let by contract, but the tracklaying was supervised by the railway management. Labor cost on an average of 50 cents Mex. a day (a high wage for Chinese labor) and the right of way cost from $15 to $900 Mex. per acre.

It might be said to be an American railway built by Chinese. This is due to the fact that Mr. Chin Yee Hee, the President, Chief Engineer and General Manager, gained his knowledge of railway matters in America where he resided for over 40 years. Not only is this true but the Chinese residents in America who subscribed the most of the capital had every confidence in the President and were not in favor of anything but American railway practice in construction and operation. The Chinese of the Sunning District are very proud of this line in view of the fact that not one foreigner is employed and not one cent of foreign money is invested in the enterprise.

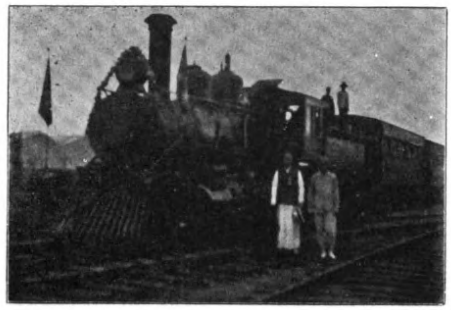
President Chin Yee Hee makes his headquarters at the company's offices at 151 Connaught Road, Hongkong, while not out on the line looking after the company's interests there. It is said that the success of the enterprise is largely due to President Hee. He made it a

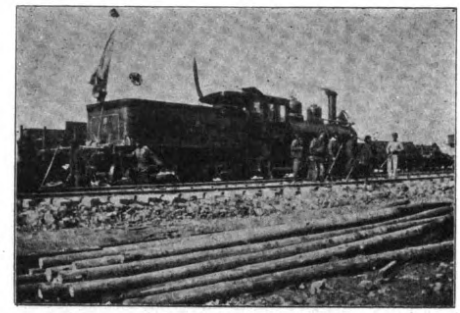


SUNNING RAILWAY.—OPENING DAY

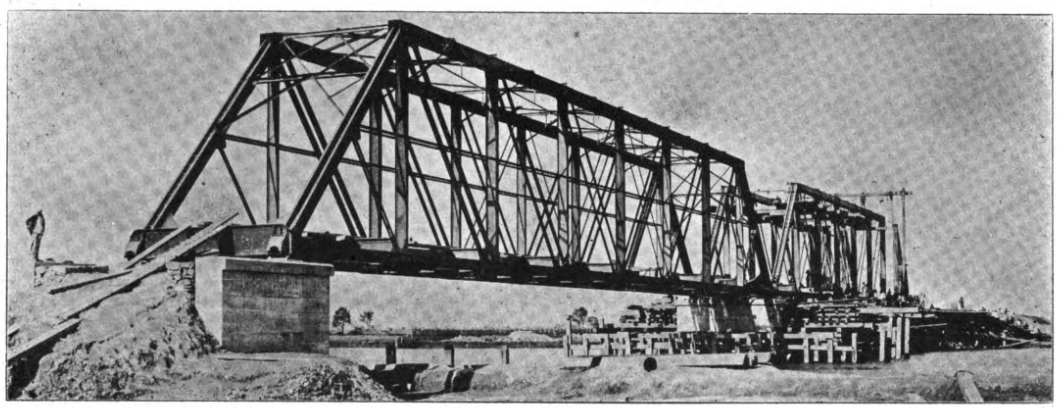


SUNNING R'Y.—AMERICAN (HARLAN & HOLLINGSWORTH) CARS





SUNNING RAILWAY.—BALDWIN LOCOMOTIVES



KIANGSU RAILWAY.—BRILGE OVER ZIA-TANG

point to respect the wishes of the natives and refrained from interfering with their superstitions. This was shown particularly in avoiding the graves and monuments the removal of which, according to the best Chinese superstition, would bring bad luck.

This company is already endeavoring to secure permission to extend northward to connect with the Canton-Hankow at Fatshan from Kong Moon, but this extension will prove very expensive and may not be realized for some time. There is also some opposition on the part of the Canton-Hankow Railway.

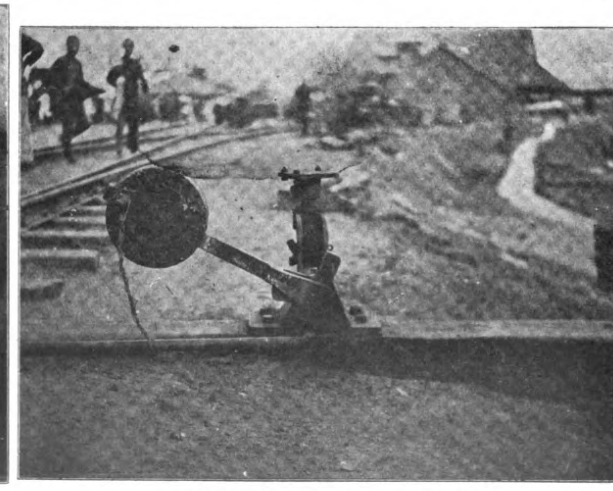
The new harbor and treaty port proposed at Sam Kap Hoi as terminus of the railway is reported feasible by the Imperial authorities and is now being considered. With the opening of this harbor and the final extension of the present line northward to connect with the Canton-Hankow, the rich and enterprising district of Sunning will not only have access to a fine port but some day may boast railway connection with the capital of the Empire. From present indications the line will be completed to Sam Kap Hoi early next year.

The Kung Yik terminal is really a port reclaimed by the natives of Sunning District in 1905. Its area is about 100 acres, of which the railway occupies about half with its station, yard offices, warehouse, machine shops, and foundry. At Sunning, the railway has a printing office and machine shop.

The salary paid the president of this line is possibly the lowest received by the head of any railway in the world. President Hee signs a voucher for $80 Mex a month and the master mechanic is satisfied with $40 Mex. a month. The schedule of wages to employés run from $45 Mex. a month to engine drivers to firemen at $18 Mex. a month and coolies $15 Mex.

At present the 40 miles in operation over which there are three trains from either end daily show gross daily receipts amounting to about $600 Mex., while the daily expenses does not exceed $350 Mex

SUNNING RAILWAY.—FREE RIDES FOR EVERYBODY



SUNNING RAILWAY.—SWITCH STAND

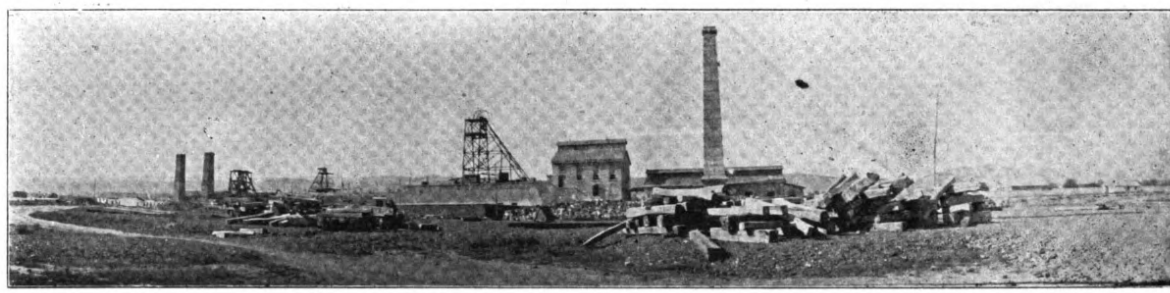
THE TAO-CHING RAILWAY

(Imperial Chinese Government Honan Line) Pekin-Syndicate Railway

The Pekin Syndicate was organized in 1897, in London, with a capital of $100,000 by British and Italian capitalists and had for its purpose the development of the almost inexhaustible mineral wealth of Shansi and Honan. After some delay negotiations were concluded in 1898 for a concession to develop the coal, iron and petroleum deposits within certain boundaries in the province of Shansi. A little later the concession was extended to cover that part of Honan north of the Yellow River. The capital of the company was then increased to $7,600,000. The question of transportation became one of the most important problems to solve and it became necessary to provide railway transportation from the mi es to the most convenient waterways. The concession provided for this contingency in a general way and has been interpreted as not only giving the right to construct a road to the nearest tributary of the Yangtsze, but to the Yangtsze itself, or in other words a general permission to construct lines at the discretion of the Corporation. The 17th Clause of the Pekin Syndicate concession reads:

"Whenever it may be necessary for any mine to make roads, build bridges, open or deepen rivers or canals, or construct branch railways to connect with main lines or with water navigation to facilitate transport of Shansi coal, iron and all other mineral products from the province, the Syndicate on reporting to the Government of Shansi is authorized to proceed with the works, using its own capital without asking for Government funds."

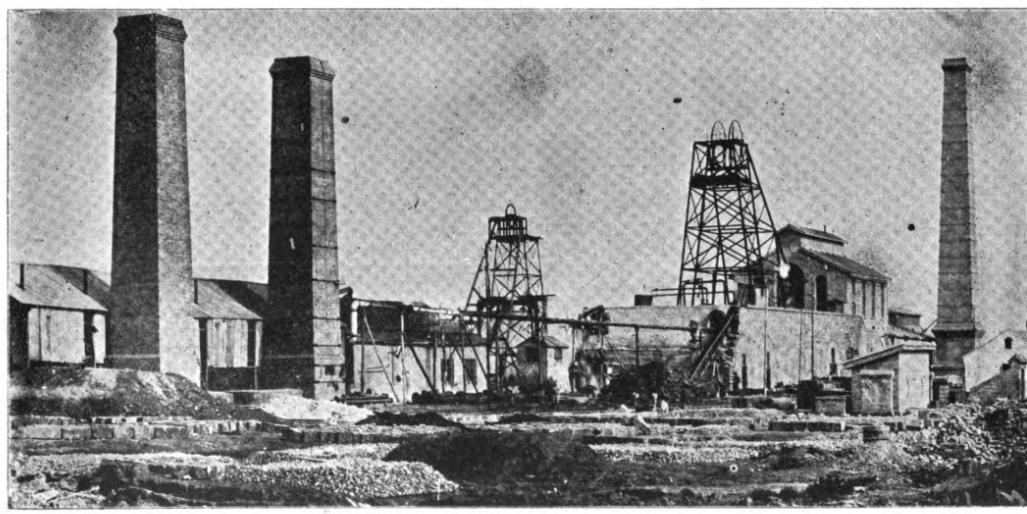
The Chinese state that their sense of this clause is naturally restricted to merely local requirements, but the Syndicate has read into it a right to construct a trunk line if necessary from Shansi to the Yangtsze, which argument, if followed to its logical end, entitles them to build roads to any market in China at their option. The surveying party sent out by the Syndicate in 1898 directed their energies towards finding a line to the Yangtsze and surveyed a route over 200 miles to Siangyang on the Han River, but finally struck out across country towards Nanking and the mouth of the Yangtsze, and recommended a line over 350 miles long to Pukow.



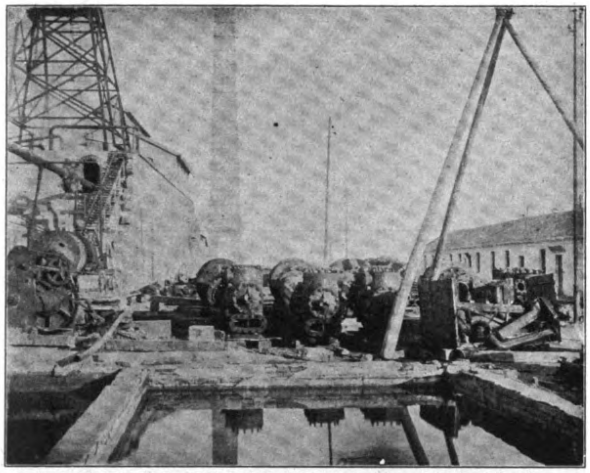
TAO-CHING RAILWAY.—GENERAL VIEW OF PEKIN SYNDICATE MINES

TAO-CHING RAILWAY.—RAILWAY POLICE

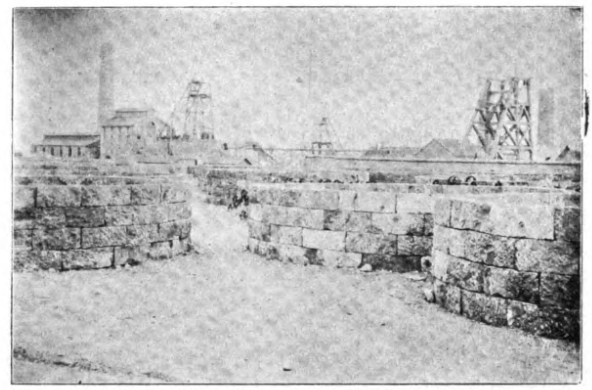
The surveys through Southern Honan to the Han River to Siangyang were unfavorably reported as it was found that the water was not deep enough for the purpose at this point. Another line was surveyed to Pukow and this



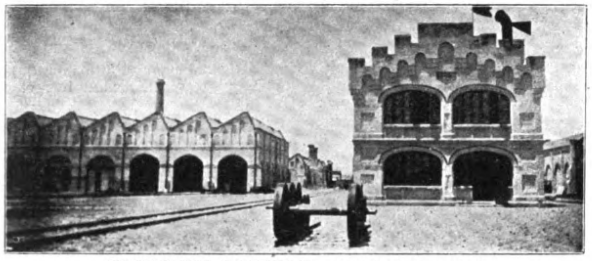
TAO-CHING RAILWAY.—JAMISEN COLLIERY



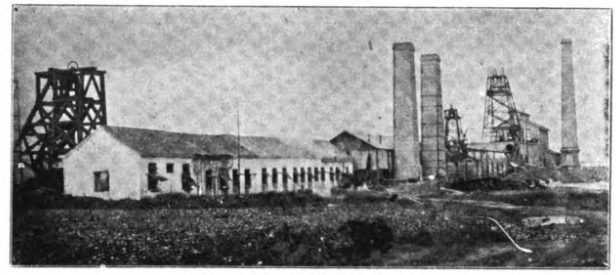
JAMISEN COLLIERY.—PUMPS AWAITING INSTALLATION



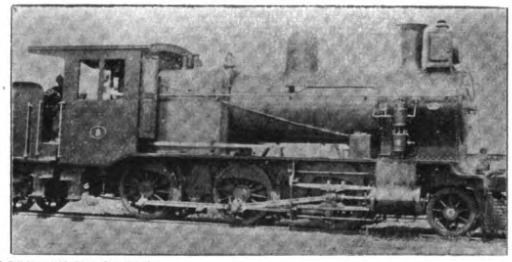
JAMISEN COLLIERY.—CUT STONE FACING FOR SHAFTS



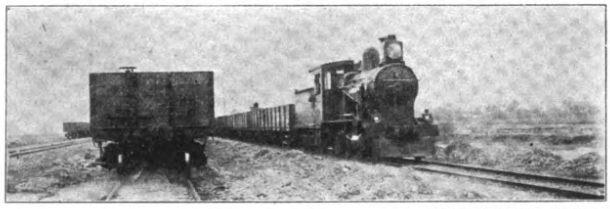
TAO CHING RAILWAY.—OFFICE AND SHOPS

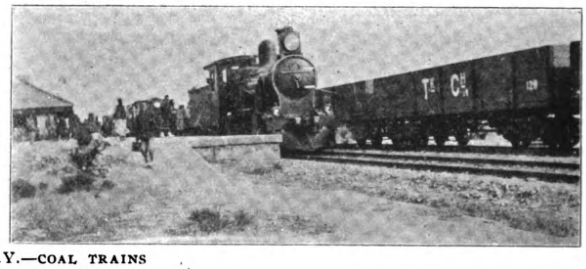


JAMISEN COLLIERY

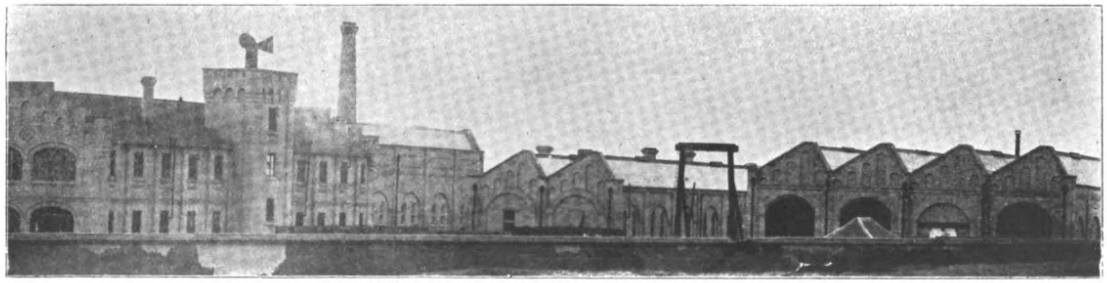


TAO-CHING RAILWAY.—LOCOMOTIVE TYPES



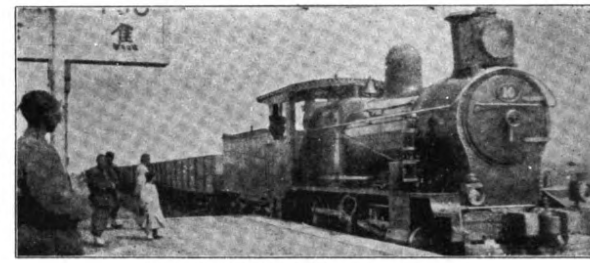


TAO-CHING RAILWAY.—COAL TRAINS



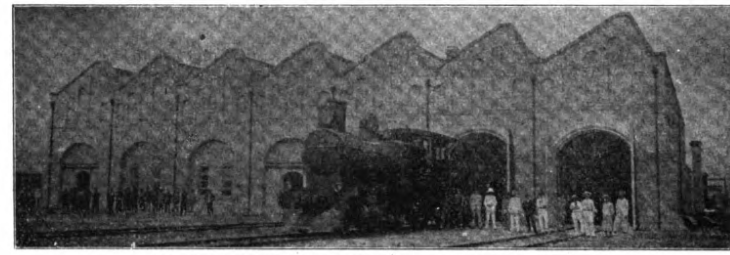
TAO-CHING RAILWAY.—CAR AND LOCOMOTIVE SHOPS

TAO-CHING RAILWAY.—YARDS



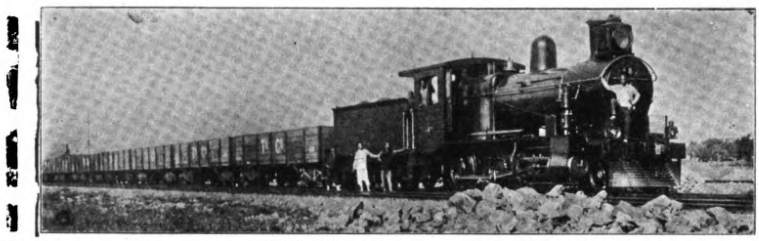
TAO-CHING RAILWAY.—COAL TRAIN

latter was recommended as the most desirable route and objective point. A survey was also concluded connecting Taoku at the head of navigation on the Wei River in Northeastern Honan to Tzechoufu in Shansi. The work of construction on the line was commenced in 1900, but this had to be delayed on account of the Boxer trouble. In 1902 work was renewed and a mining camp was established at Jamieson in Northern Hunan. With the establishment of this camp it was decided to construct a line from Taokou to Pashan, a slight modification of the regular survey. The line runs from Taokou to Sinsiang-sien by way of Weihu continuing through Jamieson to Pashan. From there it will be continued to Tzechoufu. The line from Taokou to Pashan was completed in 1905, covering a distance of 92 miles approximately.



TAO-CHING RAILWAY.—LOCOMOTIVE SHOPS

About the same time as the surveys were taking place in 1898 the British and Chinese



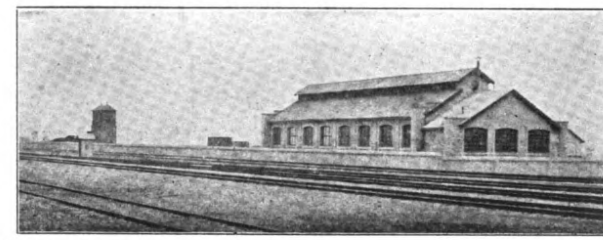
TAO-CHING RAILWAY.—COAL TRAIN

was entered into in July, 1905, in which the Chinese Government agreed to take over the line from the Syndicate and give in payment gold bonds bearing interest at 5% and the control of the road would remain with the Syndicate until the bonds are redeemed. The cost of constructing the road to Pashan was estimated at £614,600 and is represented by a loan of £700,000 which is accepted by the Syndicate at 90. The loan runs for thirty years and is redeemable after 1916. While the line has been handed over to the Chinese Railway Administration it continues to be operated by the Syndicate, the latter receiving 20% of the net profits. The continuation of the line to Tzechou and provision for its construction was also included in the agreement.

Corporation, a rival syndicate having the support of the Government, was conceded the right to build the Tientsin Pukow Line and the Pukow-Sinyang line, as compensation for the slight to British interests, in granting the Peking-Hankow line to Belgium. The situation created conflicted with the schemes of the Pukow-Syndicate. This difficulty was subsequently solved by a combination of the two companies for equal participation in all future railway development north of the Yangtsze, and it is hoped that some time in the future to construct a line from the mines to some point on the proposed Pukow-Sinyang line. The Chinese have realized their error in committing themselves to such an indefinite agreement, secured at a time when they were ignorant of its value, and have set to work to undo their mistakes by purchasing the railway at its construction value. To this end an agreement

TAO-CHING RAILWAY.—WAITING FOR THE TRAIN

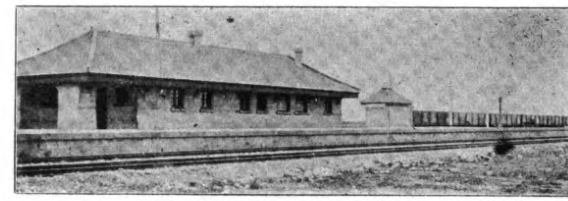
SIN-SIANG-SIEN STATION



SHOPS AND WATER TANK

TAO-CHING RAILWAY

TAO-CHING RAILWAY.—CHING-HUA STATION

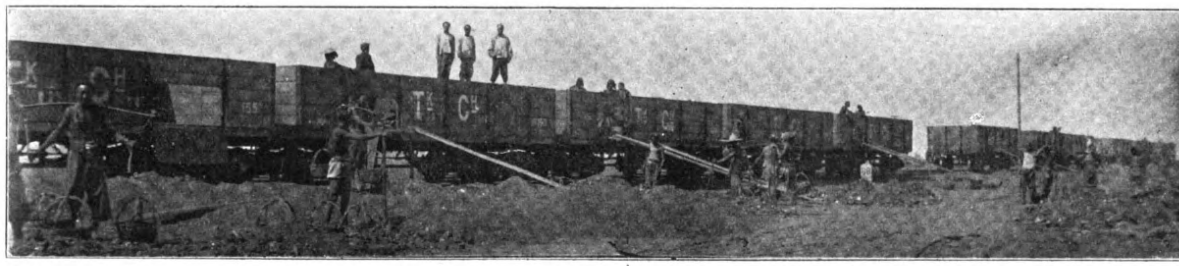


TAO-CHING RAILWAY.—CHIAO-TSO STATION

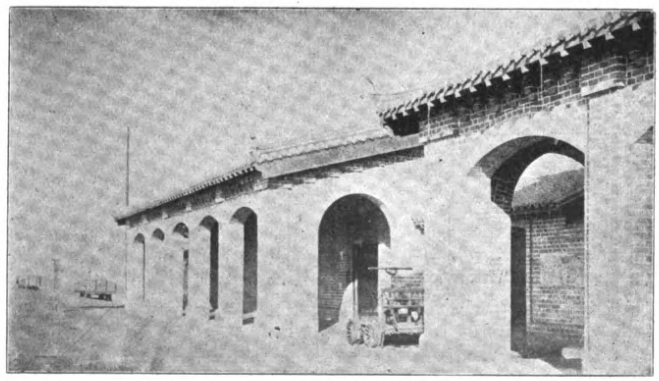
So while the Chinese have the satisfaction of owning the road, they paid for this luxury 10% more than it cost, in addition to the 5% interest charges for the 30 year life of the loan, and giving the Syndicate 20% of the net profits for operating it, following the general rule of railway loans that Chinese are too corrupt to handle loan funds without check on accounts and expenditures. Truly it was a wonderful deal, in which the much criticized Canton-Hankow redemption finds a parallel, but the Chinese were anxious to pay the price to oust the foreigner, so the latter cannot be censured.

Mr. Kent in his work on "Railway Enterprise in China" observes that "the Syndicate has not in any sense abandoned its rights which have been clearly recognized by the Chinese Government, and Pukow, as the possible objective terminus, is still kept in view; though probably in the event of the construction of the Pukow-Hsinyan Line, some point in the British Section of the Tientsin-Pukow Railway would be selected as the terminal of any future line from the concession area in North Honan and Shansi." And here we have the germ of a possible future dispute and more political pressure brought to bear on poor old China to force her to live up to the ambiguous clause of a commercial concession. The same argument would be sufficient to justify the construction of a road from Honan to connect with the Szechuen Railway or with any other road or outlet to a new market. It is difficult for an impartial observer to distinguish between such reasoning when indulged in by the British holders of an indefinite agreement, and the Japanese reading of a similar document as in the Fakumen dispute. Of course the Chinese Government clearly recognizes the rights of the Pekin Syndicate, as observed by Mr. Kent. At least they do so in principle, and are in no position to openly oppose the British pretensions. But those who run may read and the history of this Syndicate for the last few years

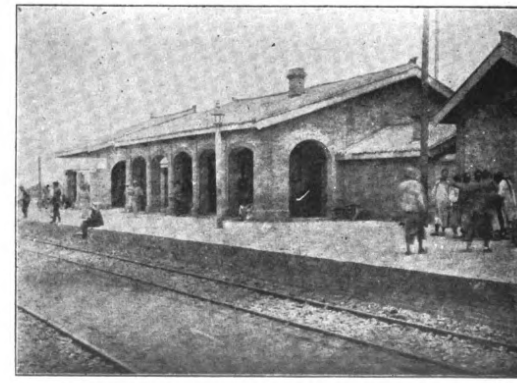
TAO-CHING RAILWAY.—CHING-HUA STATION



TAO-CHING RAILWAY.—LOADING A COAL TRAIN



SIN-SIANG SIEN STATION

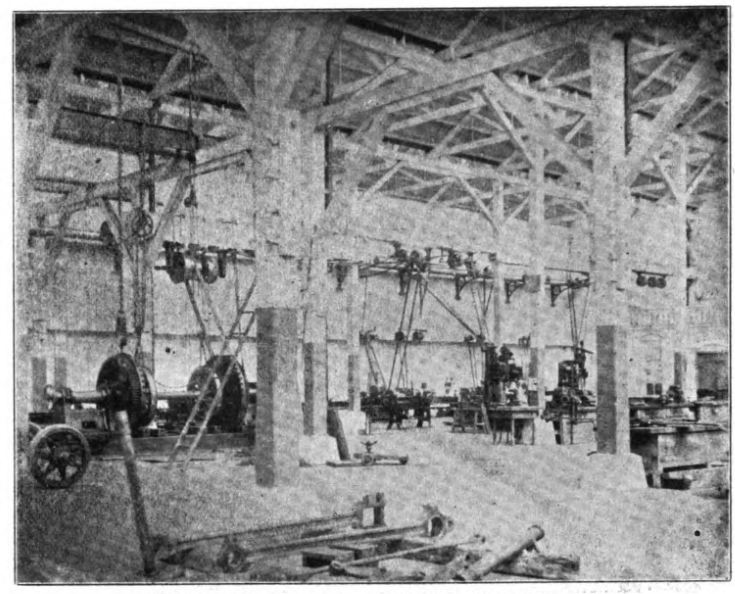


TAO-CHING RAILWAY.—TSEN TSCHROU STATION

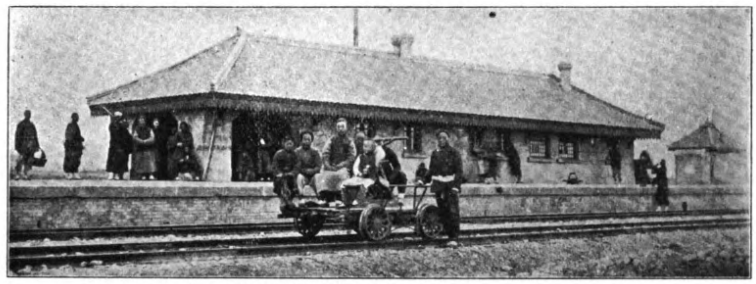
is an emphatic, though silent protest against this interpretation of the Clause. It may be taken for granted that in seeking to extend this clause to cover the construction of a trunk line 350 miles in length, the Syndicate over reached itself and antagonized Chinese opinion, and their subsequent trials and tribulations have arisen as a direct result. The Chinese have employed the only weapon at hand to combat such a pretentious scheme, and while they cannot afford to officially protest, "the pent-up anger in the heart" exists, and against this condition nothing will suffice but a complete surrender of the rights at a fair figure. To this feeling is traceable the repurchase by China of the Shansi rights.

The following from the 1906 report of the Syndicate bearing on this subject may be of interest:

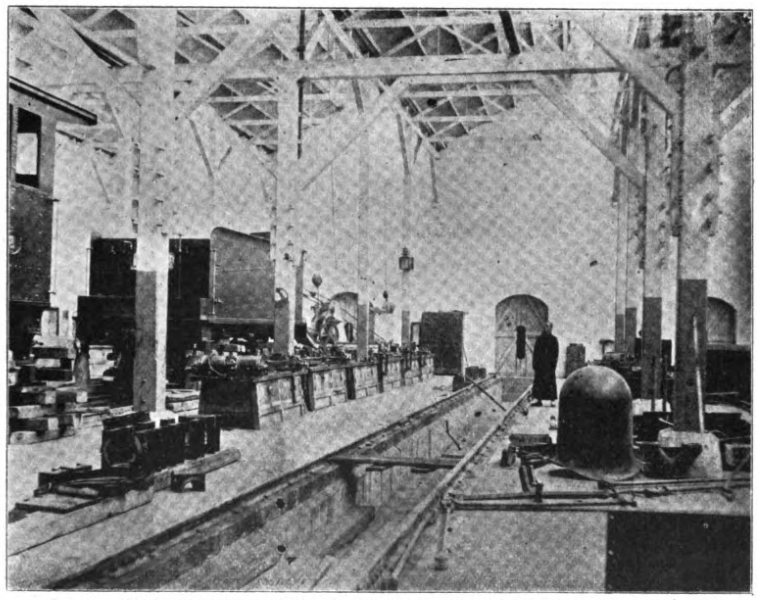
"The persistent refusal of the provincial authorities in Shansi to permit the syndicate to acquire land and commence mining was fully explained in last year's report. It was arranged that a prominent Shansi official, named Ting Nieh-tai, together with several representatives of the Shansi Bureau of Trade, and of the gentry, should come to Peking to meet Mr. Brown (our agent general) and endeavor to come to a settlement. Mr. Brown was ultimately instructed that the directors would surrender the concession for the sum of £1,500,000 sterling, half in cash and the balance in guaranteed instalments, and he so informed the Shansi delegates. The counter offer made on their part was Tls. 600,000. Finally, on January 4, 1908, after the offer had been by



TAO-CHING RAILWAY.—INTERIOR OF MACHINE SHOPS



TAO-CHING RAILWAY.—CHIA TSO STATION



TAO-CHING RAILWAY.—INTERIOR OF LOCOMOTIVE SHOPS

successive stages raised to Tls. 2,625,000, the delegates informed Mr. Brown that this was their last word, and if it was not forthwith accepted they would withdraw from all further negotiations. At this stage the directors again sought counsel with the Foreign Office, and were informed that, in the opinion of Sir John Jordan, this was in truth about the limit of the Shansi delegates' offer (whose attitude, he added, had recently become very uncompromising), and that there was no prospect of getting the Central Government to add to it. Under these circumstances, the directors took the responsibility of instructing Mr. Brown to close the offer, if better terms were not to be got. Fortunately, Mr. Brown was able, as a last effort, to get the offer raised to Taels 2,750,000, and with that he closed, half to be paid on Feb. 21, 1908, and the other half in three equal yearly instalments, beginning May 19, 1909. The directors have not abandoned all prospect of yet doing work in Shansi. It is part of the agreement that if hereafter foreign capital is required for mining, iron smelting, or transport of materials (meaning, presumably, railways), the Peking Syndicate shall have the first option. The directors consider the stipulation a very valuable one."

Recent reports from Shansi announce the formation of a native syndicate with a capital of Tls. 5,000,000 to take over the mining interests, but so far the funds have not been realized.

The Syndicate attaches great importance to the last agreement, and here again places liberal construction on the wording; "If hereafter foreign capital is required for mining, iron smelting or *transport of materials*, the Peking Syndicate shall have the first option." This has been presumed to mean railways, and the Directors of the Syndicate promised to make it their endeavor as soon as possible to take advantage of it.

Continued opposition has however met their attempts to market their coal in Honan, in competition with the small native shafts and the same antagonism among the gentry is recorded as obtained in the neighbouring province of Shansi. The central government is apparently powerless to intervene and regulate matters, and in the end the Chinese will emerge victorious.

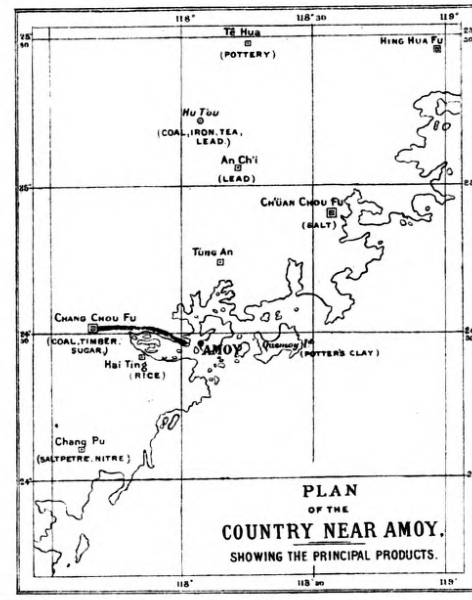
There is a moral to this story, which all Britishers should take to heart. When they complain of the breakdown of British diplomacy in face of Chinese opposition, it is well to consider some of the causes leading up to such a situation.

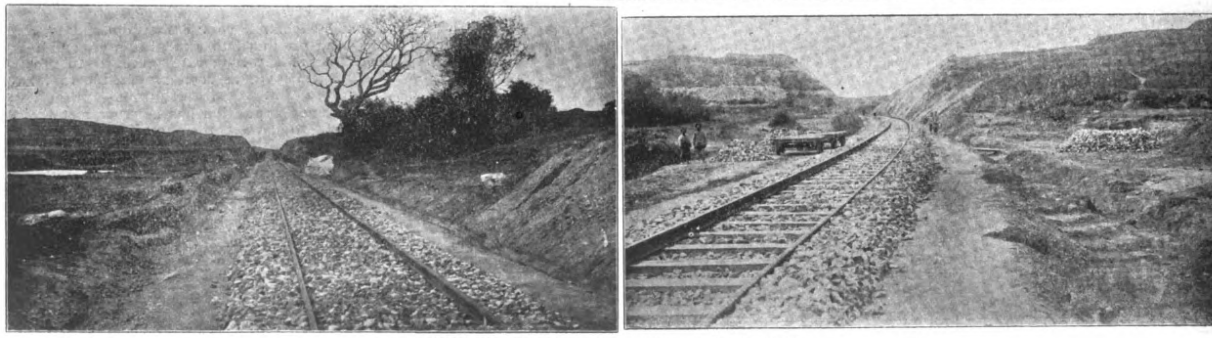
FUKIEN RAILWAYS

FUKIEN RAILWAYS.—DIRECTORS OF THE RAILWAY. HON. CHAU PAO, PROVINCIAL DIRECTOR OF PROVINCIAL RAILWAYS IN THE CENTER

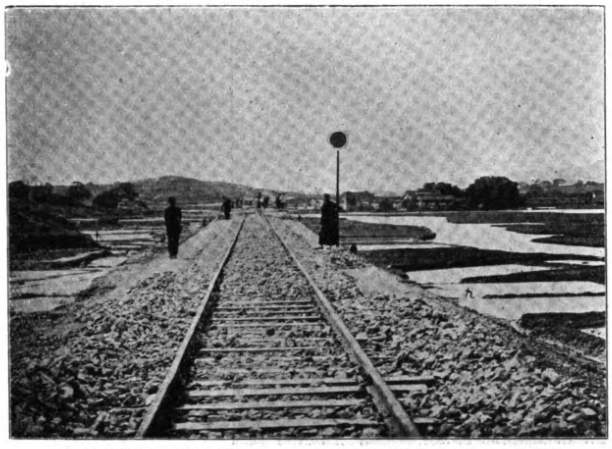
The Fukien Railway, which is ultimately to connect this province (Fukien) with the the Province of Kwang Tung, on the south, and Kiang Si, on the west, is now well under way. The route from Amoy to Changchow, a distance of 33 miles, has been surveyed and the right of way secured, and the tracks have already been laid for a distance of 3 or 4 miles. A large construction force is now working on the road and the work is steadily progressing. The terminus near Amoy is situated on the mainland at Sung Su, 2 or 3 miles distant from Amoy city proper. It adjoins the waterfront, and large ships may come alongside as soon as the piers are built. A railway depot and car shops have already been completed, are very substantially built of brick, and present quite an imposing appearance.

According to the prospectus of the company the railway is to connect Changchow in the center of the southern part of Fukien province with the port of Amoy. This will mean a railway about 35 miles in length and much difficult country to overcome. The company was originally formed with a capital of $6,000,000 in $5 shares on which a call of $1 has been made. All the shareholders are Chinese. In fact, the officials of the company and the engineers in charge of the work of construction are Chinese, who have had the advantages of foreign education.





FUKIEN RAILWAYS.—SECTION OF ROADBED.



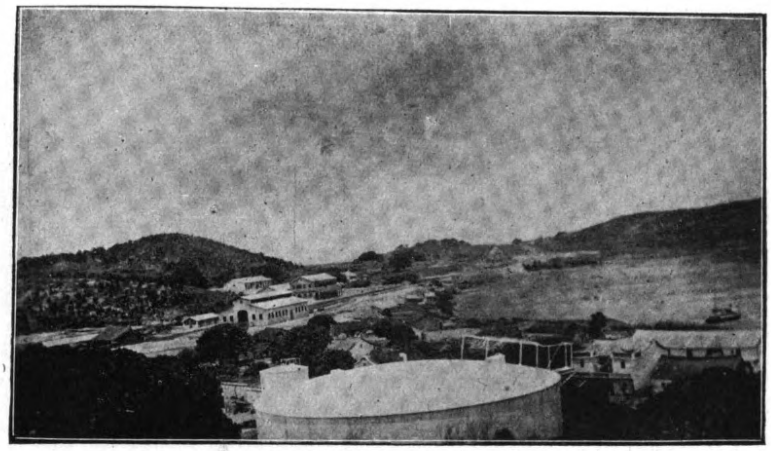
FUKIEN RAILWAYS.—LAYING TRACK NEAR SUNG-SU, AMOY

FUKIEN RAILWAYS.—TYPE OF CULVERT

FUKIEN RAILWAYS.—STATION AND OFFICES AT SUNG-SU (AMOY)

FUKIEN RAILWAYS.—CONSTRUCTING CULVERT

FUKIEN RAILWAYS.—CONSTRUCTING ROADBED. GRANITE BLOCKS FROM QUARRIES NEAR AMOY FOR ABUTMENTS



VIEW OF AMOY.—CHANGCHOW RAILWAY DEPOT AND SHOPS AT AMOY

The roadbed has been laid and grading practically completed for nine miles out of Amoy and the steel laid for about four miles. The rails for the road were all ordered from the Hanyang Iron Works in the Province of Hu-Peh, $45,000 worth having been delivered, while $75,000 worth are on the way. The contract price was about $35 per ton. The ties or sleepers are all of Japanese manufacture, some 50,000 of them having been delivered and paid for at the rate of about 53 cents a piece.

SUPPLIES FROM THE UNITED STATES.—The bridges for this road have all been ordered from the United States through the United States Steel Products Co.'s branch at Shanghai. Considerable rolling stock has also been ordered through this firm, also American couplers, turntables, and other general supplies.

Only two locomotives so far have been ordered. One is of American and the other of German manufacture. Both are now here on the field. The German locomotive has just been set up by a local engineer, and the American engine is being put together by a personal representative of the American locomotive company which manufactured it. The two locomotives are of similar type and each cost about $9,000. Additional locomotives will doubtless be ordered according to whichever of the two locomotives proves the more satisfactory.

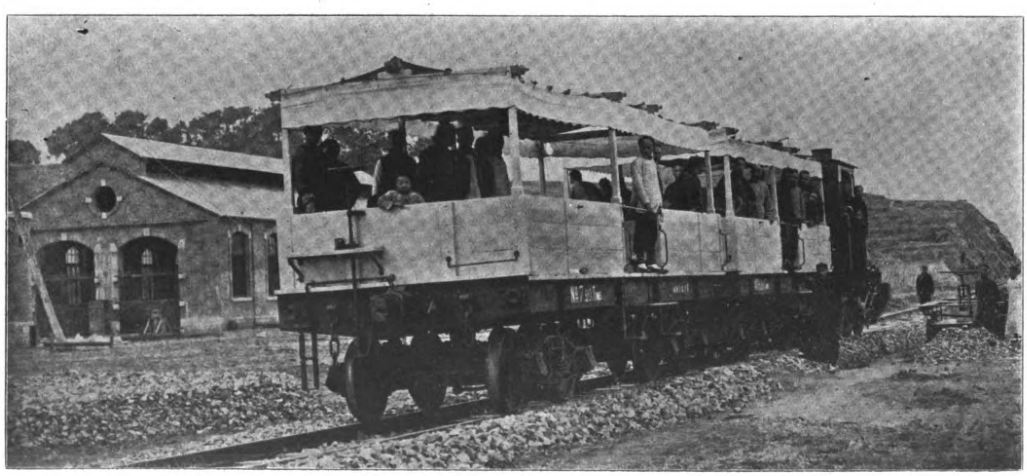
A comfortable depot with warehouse and shops have been constructed and the character of the buildings would indicate that the work throughout will be pursued with a view to permanency. So far, the directors have been conservative in view of the fact that it was an initial Chinese effort to construct railways in that section, and from what can be learned, as soon as the first section is completed and the directors have measured their capacity, greater expedition will mark the balance of the construction work.

The company has contracted with Japanese firms for the ties and sleepers and these are being delivered as required.

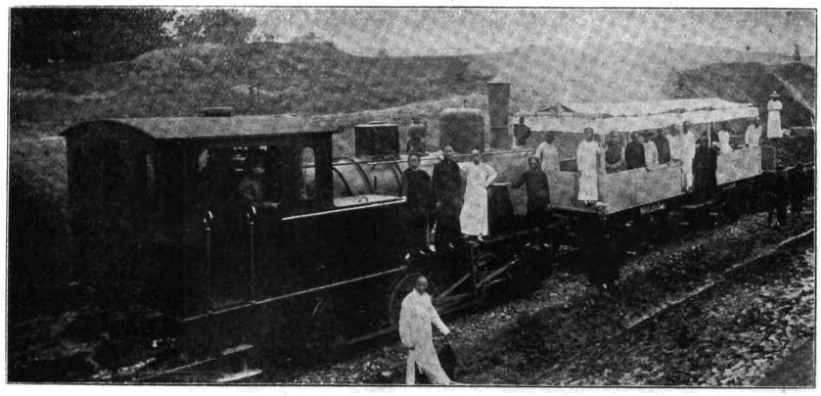
Changchow is a leading manufacturing center and in the vicinity there are a number of coal deposits that await development and the transportation that the railway will offer. Besides coal there is an abundance of timber in that section for which there is a growing demand, and with better transportation facilities to Amoy the lumbering industry would bring a large revenue into the country. In addition to the coal and timber the section referred to is one of the most important sugar growing districts in South Fukien and rice is growing abundantly along the route proposed. Amoy is famous for its fine harbour which is admitted to be the most desirable between Hongkong and North China and is large enough to accommodate a large fleet of merchant vessels without any large expense in improvements.

Previous to the activity of the Amoy Railway Company, a coast railway was proposed, joining Swatow from the south, and Foochow in the north, with Amoy, but this did not receive much support in view of the unproductive character of the country through which the line would pass.

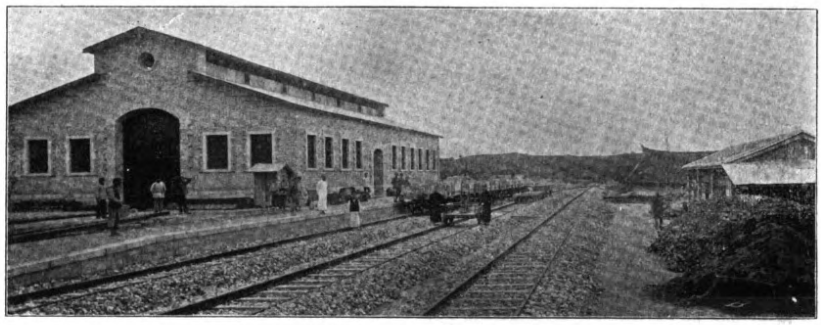
There is reason to believe that with a network of railways throughout the productive areas in Fukien carrying the product of the mine, forest and field, an era of development



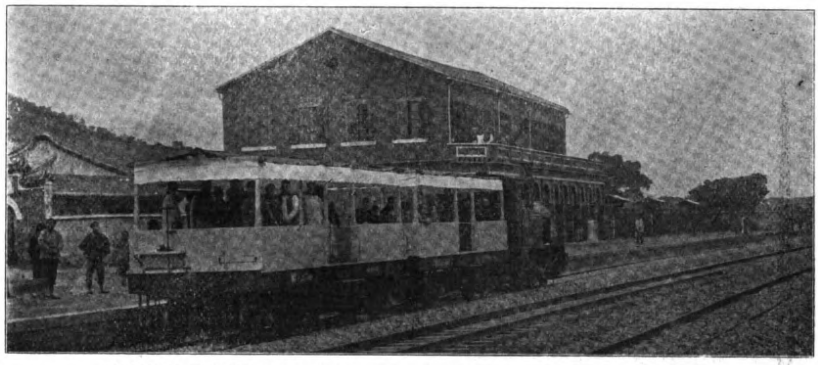
FUKIEN RAILWAYS.—THE DIRECTORS DELIGHT IN TOURS OF INSPECTION OVER THE NINE MILES OF FINISHED ROAD



FUKIEN RAILWAYS.—CONSTRUCTION TRAIN AND DIRECTORS' CAR



FUKIEN RAILWAYS.—CAR HOUSE AT SUNG-SU



FUKIEN RAILWAYS.—"SHOWING OFF" THE ROAD TO A SELECT PARTY

FUKIEN RAILWAYS.—CONCRETE GANG

would follow and Amoy with its splendid harbour would not only become as prosperous as in the days when she controlled the tea trade of Formosa, but her prosperity would be of a permanent character. It is well known that there is an abundance of iron, lead, pottery, clay, salt deposits, etc., and that the agricultural opportunities, especially in the culture of sugar, tea, tobacco, and rice, may not, on account of the inaccessible character of many sections of the country, be estimated at this time.

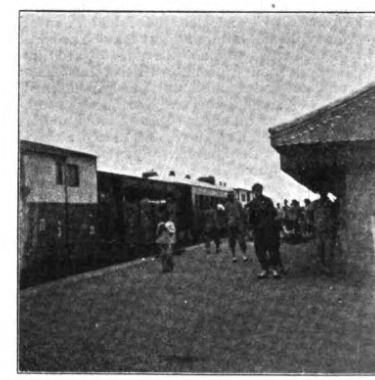
The completion of this railway to Changchow is the first step in the real development of the country and when other extensions connect such points as Lung Yen Chou, Ting Chou Fu, Hu Too, and Chuan Chou Fu, this important section of China buried within itself will be heard from and Amoy will surely become one of the leading ports of Eastern Asia.

CANTON-AMOY RAILWAY

This railway is still in the air, and has not progressed beyond the paper stage. Sometime ago the Viceroy of the Liang Kwang at Canton issued a proclamation stating that in regard to the Canton-Amoy railway, the first section would be from Chuen Lung Han, outside the Eastern Gate of Canton, to Whampoa a distance of 40 li and then from Whampoa passing Shek Lung, Pok Lo, Kwai Sin, Hoi Luk Fung and other districts to the Chin and Wai Cities and thence to Amoy in Fukien province a distance of about 1,500 li; that in the first section from Canton to Whampoa, he (the Viceroy) had ordered the Pun U Magistrate to make a survey of the track in order to find out whether this track would interfere with the houses and tombs of the people; that land should be purchased and marked off by pegs; that owners of land within the track should deliver their deeds to the company for examination; that the land would be bought from them at reasonable prices, and that they would not be allowed to raise the prices to an exorbitant rate; that if there be any houses, tombs, fruit gardens, or fish ponds in the way of the track, they would have to be removed and compensation would be given for such removal; that property owners who desire to be shareholders of the railway may convert the proceeds of their property into subscriptions thereto and interest would be paid them accordingly; and that those who dare to raise the price of land or give obstruction to the road would be strictly punished.

MANUEL EARNSHAW & CO., LTD.

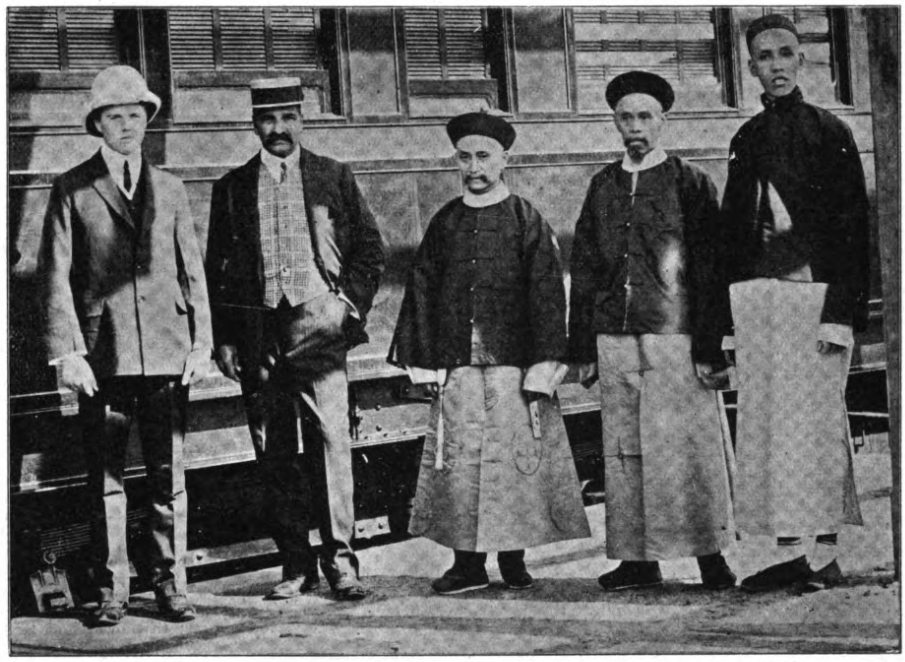
The well known engineering firm of Messrs. Manuel Earnshaw & Co. Manila, has been incorporated with a capital of ₱1,600,000 under the laws of the Philippine Islands and will continue to carry on the business along the same lines as formerly. The officers of the company are: President, Mr. Manuel Earnshaw; First Vice-President, Mr. Tomas Earnshaw; Second Vice-President and Treasurer, Mr. Daniel Earnshaw, Jr.; and Mr. Charles A. Clark, Secretary.



TAO-CHING RAILWAY STATION

THE SHANGHAI-NANKING RAILWAY

* By A. H. COLLINSON, M. Inst. C. E.



SHANGHAI-NANKING RAILWAY.—HIS EXCELLENCY TAOTAI CHUNG MUN-YAU, MANAGING DIRECTOR, IN THE CENTER. MR. A. W. U. POPE, GENERAL MANAGER, TO HIS LEFT.

Editorial Note:

We leave the story of this line to be told by its Chief Engineer. There has been so much criticism directed against the extravagant use of the loan funds, that Mr. Collinson's paper will enable readers to arrive at an approximate appreciation of the work carried on under his direction. Mr. Collinson's figures as given herein, however, fall short of the actual amounts expended, for the line to date according to published figures has cost £11,300 per mile. The costs of rolling stock are also subject to revision and in some instances are higher than the figures given herein and are now being determined by investigation of the construction accounts.

It is estimated that, omitting all financial charges, commissions and other items, the actual cost of construction will be £10,600 per mile.

It may be said that the British & Chinese Corporation, in living up to the terms of its agreement to build a line embodying the most approved railway principles consistent with economy in cost, while fully complying with the provision of excellence, has failed to meet the Chinese idea of economy. It may be accepted as a fact, that China's attitude towards all foreign loans and especially British has been materially altered as a result of lessons learned from the Shanghai-Nanking administration, in which sole control of expenditures was under the Foreign Chief Engineer. There are always two sides to any dispute and both parties seem to have well founded grounds for complaint against each other, but pending a final report based on full investigation of the expenditures judgment should be suspended. To the difference of opinion arising from the construction of this line, in which the Chinese hold that extravagance prevailed to increase the size of the loan and commission on purchases, and the persistent refusal of the Corporation's representative to admit their capacity and honesty, can be traced the many set backs to British diplomacy in China, and her final refusal to have any further dealings with the Syndicate, and the substitution of the Hongkong & Shanghai Bank as the representative of British interests in the recent Canton-Hankow-Szechuen Loan preliminaries.

MR. A. W. U. POPE
GENERAL MANAGER OF THE SHANGHAI-NANKING RY.

Although the amount of the Loan under the terms of the Agreement with the Corporation was £3,250,000, only £2,900,000 have been issued in two instalments. The attitude of the Chinese Government is that instead of authorizing the balance of the loan, they will supply any further funds needed for the completion and operation of the line from the Imperial Treasury, and to this end have already appropriated Taels 1,604,958 (£221,373).

The road does not pay, despite the strenuous efforts of a most experienced and competent foreign manager, who has already done wonders in the face of almost insurmountable obstacles.

The capital expenditure on the construction of the line up to the end of 1908, was Taels 16,690,508, to which must be added the commissions on purchases amounting to Taels 428,349 or Taels 17,118,850 @7.25 (£2,361,221) or £11,300 per mile (209 miles including sidings). The earnings of the line for 1908 amounted to $ Mex. 1,610,477, of which sum $1,393,591 was from passenger service alone, the freight receipts only amounting to $141,218. The expenditures were $1,092,662, or 67.85% of the receipts. As the interest on the loan amounts to $1,274,134, there is a wide deficit to be faced until the line is able to meet its fixed charges, and this must be paid by the Imperial Government. Under existing conditions, with the collection of provincial likin tax on freight, there is little hope of any great expansion to the goods traffic. If the likin were removed or materially reduced, the line would benefit and be made to pay in a short time. But here the Chinese Government remains firm and refuses to abolish the tax which would make the road profitable and relieve the Imperial Treasury from making good the deficit.

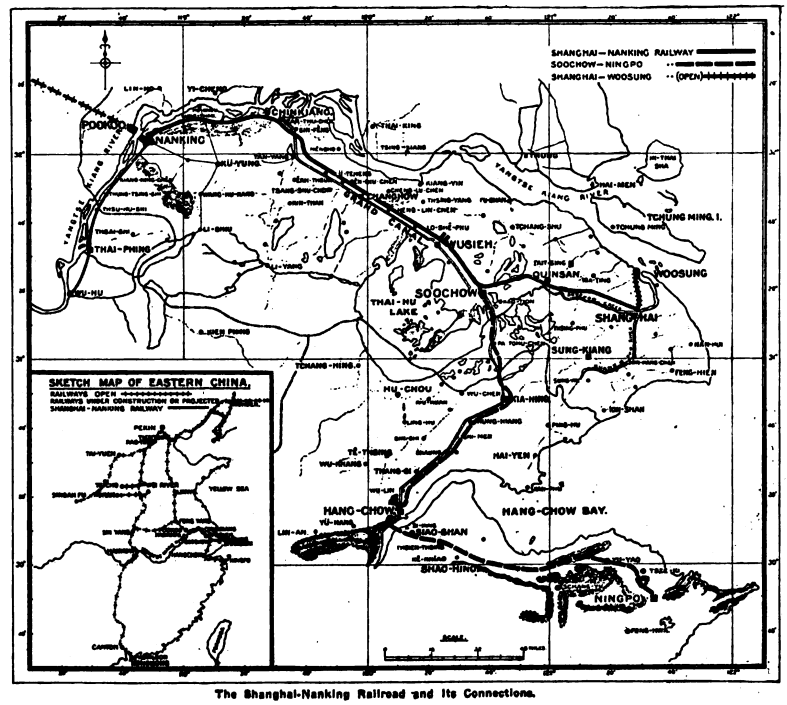
The Viceroy of the Liang Kiang has issued a proclamation making the likin tax on railways lower than on the creeks and canals, but even this does not seem to remedy matters. The Chief Accountant observes in the last Budget that the lack of goods traffic is in the main responsible for the high ratio of expenses to earnings, as also the excessive charges for the purely Chinese Department of the line. These last are naturally resented by the Corporation as an

* Engineer-in-Chief of the Shanghai-Nanking Railway.

unnecessary burden and by the foreign employees as a reflection on their capacity and loyalty. These charges could be materially reduced but as yet the Chinese Government has shown no disposition to decrease the purely Chinese staff. Their duties consist largely of translating all documents and accounts for transmission to Peking and much unnecessary work is entailed.

To the outsider the situation is amusing and instructive. The shoe has been shifted to the other foot, and it pinches hard. The foreign winces from the pain, resents the hidden slight to his integrity and the loss to his pocket by the excessive addition to the working expenses of the line. There is no reflection or insinuation against the honesty or capacity of the foreign officials, but they are simply victims of circumstances over which they have no control, and however strenuous their efforts to make the line pay, they will always be handicapped.

This attitude on the part of China provides food for reflection, to those who can read between the lines. Out of the net profits of the road the British and Chinese Corporation are to receive 20%. If there are no profits they receive nothing. If the Chinese abolish the likin tax or enforce honesty in collecting the higher creek rate, which is a tangible asset to the Treasury, thus diverting the carrying trade to the railway they will contribute to the prosperity of the Corporation by giving up 20% of the profits. The likin tax on goods is assured while boat traffic exists on the creeks and canals. By holding to this source of revenue, they are assured of funds to assist in paying the deficit on the railway, and making the enterprise unprofitable to the Corporation, and hastening the day when they will agree to a surrender of their rights at a fair consideration. As in the case of the Pekin Syndicate, there is a moral to this situation which British interests may well ponder over.



The Shanghai-Nanking Railroad and its Connections.

REVISED SUMMARY OF COST BY MAIN HEADS AND COST PER MILE WITH PERCENTAGES

MAIN HEAD.	TOTAL COST TO END OF JULY 1909.	COST PER MILE ON SINGLE LINE BASIS.	%
I.—PRELIMINARY EXPENSES. (Survey; Plant)	$ 16,978.12	$ 73.82	.101
II.—LAND	1,837,063.74	7,987.23	10.913
III.—FORMATION. (Earthwork; Double Line; Tunnels; Creeks; Roads)	1,689,343.51	7,344.97	10.036
IV.—BRIDGE WORK. (Major and Minor Bridges; Culverts; Drains)	1,963,544.66	8,537.15	11.664
V.—FENCING. (Boundaries; Signs)	42,614.40	185.28	.253
VI.—ELECTRIC TELEGRAPH	70,898.42	308.25	.421
VII.—TRACK. (Ballast; Permanent Way)	4,876,585.11	21,202.54	28.969
VIII.—STATIONS AND BUILDINGS. (Buildings and Fixtures; Station Machinery; Furniture; Workshops and Stores; Temporary buildings other than quarters)	1,944,654.87	8,455.02	11.552
IX.—PLANT. (Construction Plant; Locomotive and Carriage and Wagon and Engineering Tools and Plant; Steam Launches; Houseboats, etc.; Printing Tools and Plant; Electric Plant; Locomotive and Carriage and Wagon Rolling Stock)	2,667,888.36	11,599.52	15.848
X.—GENERAL CHARGES. (Engineering; Accounts; Stores; Direction; Medical; Locomotive; Traffic; Chinese; Miscellaneous)	1,724,280.01	7,496.87	10.243
Total of Final Construction Heads	$16,833,851.20	$73,190.65	
DEDUCT.			
2-5 cost of Earthwork Soochow Division $157,056.89			
5-12 cost of Bridge work Soochow Division 323,127.71	480,184.60	2,087.76	
	$16,353,666.60	71,102.89	
ADD			
Commission on Purchases in England	227,837.16	990.60	
Commission on Purchases in China	202,238.45	879.30	
Commission General	8,299.45	36.08	
Nanyang College Donations	10,000.00	43.48	
Exchange Account	61,248.60	266.30	
Likin Confiscation Account	3,825.64	16.63	
Land Exchange	9,247.34	40.21	
	$16,876,363.24	$73,375.49	

Mileage including sidings and loops—230 miles of single line.

Average cost per mile to end of July 1909, $73,375.49 which at an estimated average rate of $7.2 to a £ gives £10,191 per mile open

The preliminary agreement for the acquisition of a loan for the construction of the SHANGHAI-NANKING RAILWAY was signed on the 13th May, 1898, at Shanghai between the Director General of the Chinese Imperial Railway Administration, Sheng Hsuan Hwai, acting under instructions from the Tsungli Yamen, and the British Firm of Jardine Matheson & Company, for themselves and on behalf of the Hongkong & Shanghai Banking Corporation, representing as Joint Agents a British Syndicate. On the 12th day of December, 1902, an Imperial Decree was issued by the Throne and on the 9th day of July, 1904, a final agreement between Sheng Kung-Pao, Director General of the Imperial Chinese Railway Administration, and the British & Chinese Corporation, Ltd., was signed at Shanghai by Sheng Kung-Pao, the Director General of the Imperial Chinese Railway Administration, acting under authority of an Imperial Decree, of the one part, and Messrs. Jardine, Matheson & Co., and the Hongkong & Shanghai Banking Corporation, representing as Joint Agents the British & Chinese Corporation, of the other part.

The final agreement provided for the issue of a sterling loan for an amount not exceeding £3,250,000 secured by Imperial Chinese Government Bonds with the railway as first mortgage security therefor. The price agreed upon for the loan was 90 per cent of the nominal value of the bonds which bear interest at the rate of five per cent per annum on their nominal value payable half yearly.

The duration of the loan is fixed at fifty years commencing from the date of the ratification of the agreement, but under certain conditions the agreement provides for the redemption of the loan after 12½ years and at par after 25 years.

The amount of the loan was based on the preliminary surveys and estimates which were prepared by the consulting engineers, Messrs. Sir John Wolfe Barry, the late Gabriel James Morrison, and A. J. Barry, M.Inst.C.E., and included provision for payment of interest out of capital during construction, Tls. 1,000,000 the agreed purchase price of the existing Shanghai-Woosung line, the sum of £250,000 for the purchase of land by the Chinese Administration for a double line of railway for the whole distance, and for the construction and equipment as economically as possible in accordance with the best modern system of the line from Shanghai to Nanking.

S. N. R.—TRAIN

In July, 1903, a staff of engineers was engaged in England with the author as Engineer-in-Chief, and work on the permanent survey and location was commenced as soon as the numerous difficulties inseparable with a new undertaking of this nature had been overcome.

It was decided that in the first instance work only on the section from Shanghai to Wusieh should be commenced in addition to some of the heavier work on the Chinkiang-Nanking Section, including the tunnel and deep cuttings in the vicinity. The permanent surveys and estimates were completed during the summer of 1904 and approved by the Director General, and construction work was commenced in the following autumn, considerable delays were experienced in the initial stages however, particularly in land acquisition, matters in this respect improved in the spring of 1905 when on April 25th the ceremony of cutting the first sod was performed by H. E. Sheng Kung-Pao at Shanghai, and the first section of the railway was opened to traffic to Naziang on November 20th of the same year, and in the following July to Soochow and Wusieh, to Changchow on May 15th, 1907, to Chinkiang on October 15th, 1907, and on March 28th, 1908, the first train ran from Shanghai to Nanking in 5 hours and 37 minutes inclusive of all stops.

Alignment.—The alignment generally follows the line laid down on the preliminary survey by the late Mr. James Morrison, M.Inst.C.E., excepting that at Quinsan the writer decided a better route could be got by passing the city on the south instead of on the north; a considerable improvement in alignment was also made between Lungtan and Nanking, the route being shortened with a better line and easier gradients.

During the preliminary examination of the country between Shanghai and Nanking, the writer came to the conclusion that in locating the railway any attempt to avoid all interference with the almost countless graves and houses would, besides ending in failure, have involved a succession of curves and kinks absolutely ruining the general alignment together with all ultimate prospects of fast running and economical operation, he therefore recommended the adoption of the longest straights possible as likely to be in the end the most satisfactory, both as regards directness and therefore shortness of route, first cost of construction, and future cost of maintenance and operation, a policy which was fully endorsed by the Chinese Authorities and was worked up to.

The line does not interfere in any way with any ancestral halls, tombs, or monuments, some slight deviations being made to avoid disturbances of this nature.

The total length of the railway on centre line from Shanghai to Nanking is 193.02 miles, the section to Soochow for a distance of 53 miles 1,564 feet has been constructed with works for a double line, the extra cost over single line works out in the proportions of five-twelfths (5-12ths) for the bridgework, and two-fifths (2-5ths) for the earthworks.

The following tables give particulars of the gradients and curves adopted, from which it will be seen that the ruling gradient is 1 in 200, but only 5.64 miles or 2.9 per cent of this, and the sharpest curve 3°.

The gradients in general are easy, there being 128.34 miles of flatter than 1 in 1,000 or level line.

The aggregate length of the curves between Shanghai and Nanking being 19.8 miles, the sharpest 3°, but only two of these totalling 4,180 feet in length.

The ratio of curve to total length of line equals 9.75%.

GRADIENT ABSTRACT

Inclination.	No.	Miles (Mile 0 to 193) length	Percentage of total length
1 in 200 or 0.5%	6	5.64	2.9
1 in 250 or 0.4%	8	3.30	1.7
1 in 300 or 0.33%	19	13.50	7.0
1 in 350 or 0.28%	1	0.20	0.1
1 in 400 or 0.25%	6	5.91	3.0
1 in 500 or 0.20%	57	22.35	11.6
1 in 600 or 0.16%	1	0.45	0.2
1 in 700 or 0.14%	2	1.57	0.8
1 in 1,000 or 0.10%	23	11.74	6.1
Flatter than 1 in 1,000, including level	...	128.34	66.6
	123	193	100.00

A. H. COLLINSON, M. I. C. E.
CHIEF ENGINEER OF THE SHANGHAI-NANKING RAILWAY DURING CONSTRUCTION

CURVE ABSTRACT

Angle of Curvature.			No.	Mile 0 to 193 Feet Length.
0°-30′	Radius	= 11,459 feet	2	700
1°- 0′	,,	= 5,729.6 ,,	37	57,192
1°-30′	,,	= 3,819.8 ,,	2	7,530
1°-40′	,,	= 3,437.9 ,,	1	2,420
1°-50′	,,	= 3,125.4 ,,	2	3,630
2°- 0′	,,	= 2,864.9 ,,	11	19,574
2°-50′	,,	= 2,022.4 ,,	2	4,270
3°- 0′	,,	= 1,910.1 ,,	2	4,180
			59	104,496
		Miles	19.8	

Ratio of curve to total length of line = 9.75%.

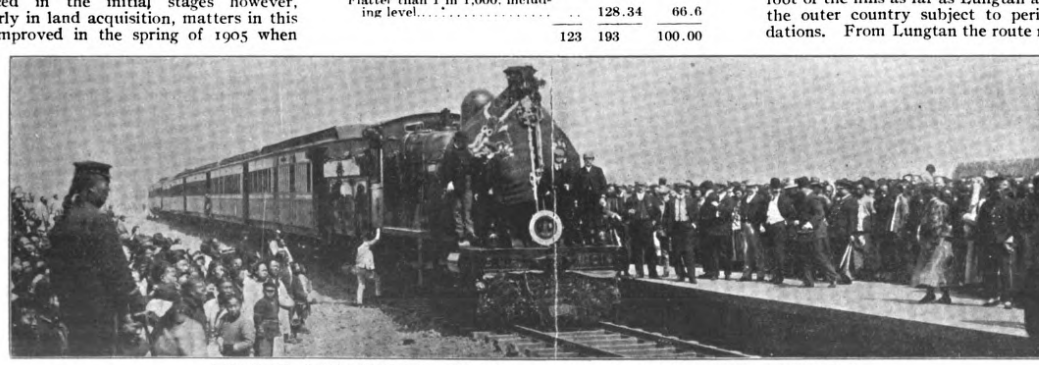
All curves sharper than 1° curvature (radius 5,730 feet) are entered by transition curves 200 feet in length in all cases, an easy method, due to the late Mr. Gabriel James Morrison, was adopted for setting out these curves, the formula is too lengthy to give in detail in this paper, but the method is fully described in the more modern treatises on surveying, and the author also thinks in the minutes of the Institution of Civil Engineers.

The country traversed by the railway between Shanghai and Nanking is well known to the members of this society and does not need description at length.

From Shanghai to Tanyang the line crosses the highly cultivated alluvial plain of the Yangtze Valley, intersected with a network of canals and creeks, the following principal cities and towns being situated on the route:

Naziang, Quinsan, Soochow, Wusieh, Changchow and Tanyang; after leaving the latter city the country changes, the line traverses an undulating and rising country until it reaches a ridge or watershed at mile 144, from this ridge it descends on easy gradients to Chinkiang City along an undulating country necessitating heavy cuttings and a tunnel through the Fort Hill.

From Chinkiang the alignment runs at the foot of the hills as far as Lungtan and so avoids the outer country subject to periodical inundations. From Lungtan the route runs through



SHANGHAI NANKING RAILWAY.—ARRIVAL OF FIRST TRAIN AT NANKING

hilly country to within 1½ miles of Nanking, involving very heavy earthworks both in cutting and embankment, the summit of the railway is reached at mile 186, the rail level being 91.28 feet above the I.M.C. low water mark at Shanghai.

The terminus at Nanking is on embankment, the only possible site for the station yard being on low swampy ground on the south bank of the Yangtze and subject to annual inundation which necessitated heavy earthwork charges, the area required for the yard having to be raised an average of 15 feet.

Earthworks.—The type width of embankment for double line at formation level is 30 feet, and for single line bank 17 feet 6 ins., the slopes being 1½ to 1, single line cuttings are in general 25 feet 6 ins., and double line 38 feet in width at formation level. The usual slope of the cuttings is 1½ to 1, but in many instances this had to be increased to 2 to 1 and in one deep cutting on the Chinkiang Section a slope of 3 to 1 was found necessary.

From Shanghai to Tanyang nearly all the embankments were made from side cutting, an exception being the bank across the Hsu Shir Kwan marsh at mile 60, which had to be topped entirely by light railway and wheelbarrows, the seat of the embankment being continually under water or waterlogged and borrowpits alongside impracticable, an allowance for settlement of 25% in height was made in this latter work, which proved to be barely sufficient.

Between Tanyang and Chinkiang portable light railway was largely used, light rails and steel all round tip wagons holding one cubic yard were extensively employed in tipping the excavation from cutting to embankment, but it was found that with a lead exceeding 1,000 feet it was more economical to tip the cutting to spoil and to make the bank from borrowpit. At the Nanking terminus a metre gauge locomotive with a set of twenty-five 4 cubic yard trucks were advantageously employed in bringing earth from a hill 1½ miles distant to fill the station yard, this plant being supplemented by 5 miles of light railway, wheelbarrow and basket transport working from nearer borrowpits.

Cost of Earthwork.—Shanghai Division.—The quantity of earth required for filling at Woosung workshop yard, Shanghai station and Markham Road goods yards, which chiefly had to be led by locomotive from long distances, dumped and recarried by baskets, amounted to over 100,000 cubic fongs at a total expenditure with all charges of $106,216.00.

From mile 1 to mile 144 inclusive.

The following are the actual figures:—

	Cubic fongs.
In Cuttings and Banks	1,175,831
Station Yards	118,551
Creek Divisions	83,501
Roads	29,878
	1,407,761
	=5,213,929.63 cubic yards.

Of this
Fongs 447,939 in 5′.0 bank or under = 36%
Fongs 371,412 in 10′.0 bank or under = 31%
Fongs 356,480 in 10′ to 30′ bank or under = 33%
100%

29,878 fongs of brick rubble were boated for use in topping high embankments.

Cost.
5′.0 bank or under average $0.35 per cubic fong.
10′.0 bank or under average $0.376 per cubic fong.
Over 10′.0 bank under average $0.51 per cubic fong.
Pumping borrowpits 3% of total cost.
Service roads and bridge 5½% of total cost.

The above rates include the cost of all plant, such as light railway, which was provided when required by the Railway. From mile 144 to Nanking, mile 193.

The quantities of earthwork were as follows:—

	Cubic fongs.
Embankment	965,000
Cuttings	285,000
Total	1,250,000

Total cost $760,000 = $15,200 per mile, or 60 cents per cubic fong average for all classes of heavy earthwork, including embankments from 10 to 30 feet in height and cuttings from 15 to 60 feet deep. Rates include cost of plant, locomotive and all contingent charges.

The work throughout was let by contract to native contractors at schedule rates, payments being made on measurements from excavation in cutting or borrowpit with the usual allowances for extra lead exceeding an average of 200 feet.

The slopes of most of the deep cuttings have been turfed to prevent erosion and experiments have been made in sowing many of the slopes with grass seed with a similar object.

Very little trouble has been caused by slips. In the few cases where these have occurred the slopes have been drained with stone rubble counterforts connected with arches of the same material carefully handpacked on the face. The author considers this form of drainage far preferable to the more common V-shaped drainage generally adopted in railway practice, the arches not only serving as drains but also to support the loose material. He has known this method of arched counterfort drainage to succeed in stopping slips in heavy clay when all other means had failed.

Bridges and Culverts.—The bridgework from mile 1 to Wusieh, at mile 80, was very considerable for the reason that although there are no bridges of larger span than 60 feet, 164 navigable canals and creeks had to be crossed, an average of just over two bridges per mile. From mile 80 to mile 144 there are rather more than 1 a mile, the work, however, being of a heavier nature. From mile 144 to Nanking there are 69 bridges, mostly minor openings, as owing to the nature of the country there are much fewer defined main creeks.

The total number of bridges constructed from Shanghai to Nanking numbers 303, having a total waterway of 5,857 lineal feet. From mile 1 to 144 there are 20 major bridges and 313 minor, while from mile 144 to Nanking there are 5 major bridges and 64 minor.

Culverts.—Between mile 1 and Nanking there are 405 culverts having a total area of 1,992 sq. feet, particulars of these have also been given above.

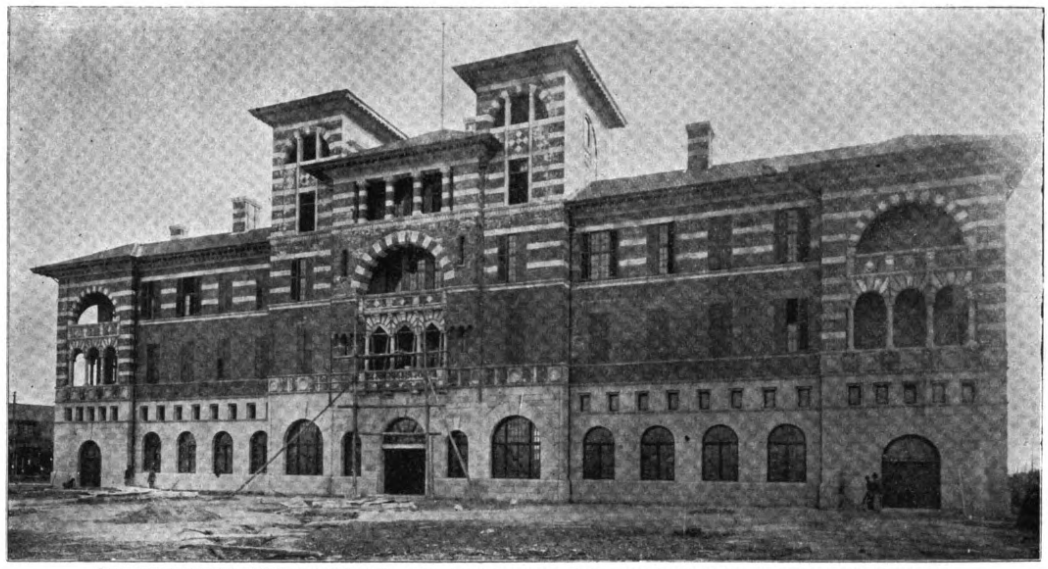
Between Shanghai and Soochow, with few exceptions, the abutments and piers of the bridges, which have been built for a double line, are constructed entirely of brickwork in cement on cement concrete foundations.

From Soochow to mile 144 the majority of bridges are constructed of coursed granite set in cement on concrete foundations, while from mile 144 to Nanking the larger part of the substructure consisted of cement concrete.

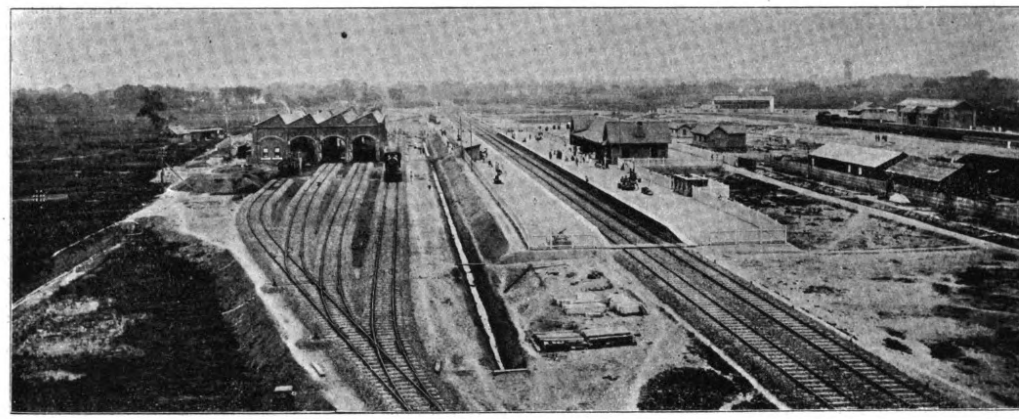
Three types of bridges were generally adopted, abutments with splay wing walls, abutments with straight return wing walls, and pier abutments.

Wherever possible, where headway would permit, arched superstructure was adopted (diagram 7 illustrates a type) but in the majority of cases, more particularly between Shanghai and Sinfeng, mile 138, steel girder superstructure had to be used.

The majority of creeks crossed being navigable, sufficient headway had to be given for boats to pass with their masts down. The headway was invariably fixed from that of the lowest existing bridge on the creek.

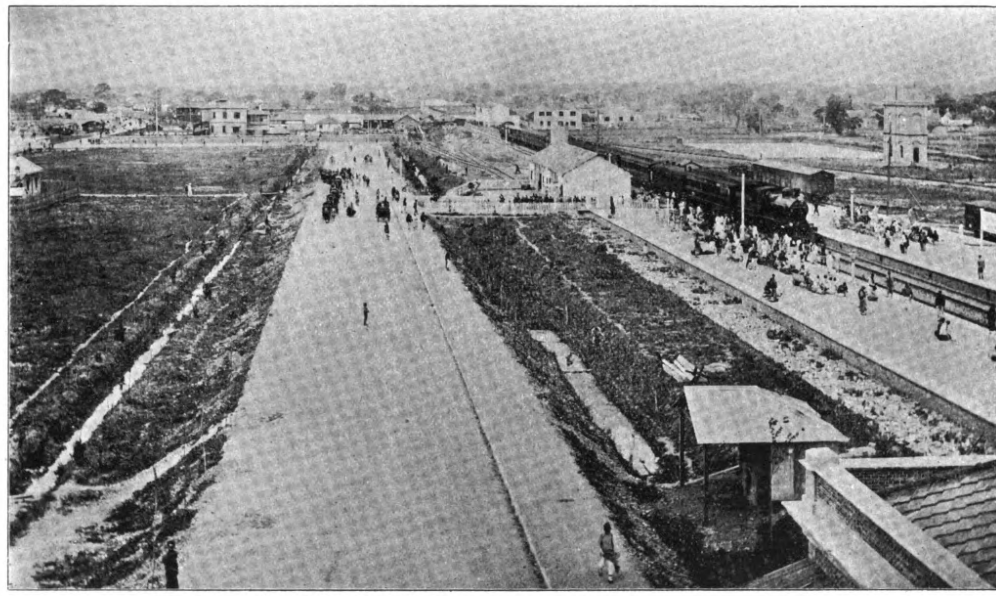


SHANGHAI-NANKING RAILWAY.—THE NEW STATION AND ADMINISTRATION BUILDING AT SHANGHAI



SHANGHAI-NANKING RAILWAY.—CHANGCHOW STATION AND YARD

It is impossible in this paper to refer in detail to the difficulties encountered in the construction of many of these bridges. The foundations, hardly without exception, were bad, as was to

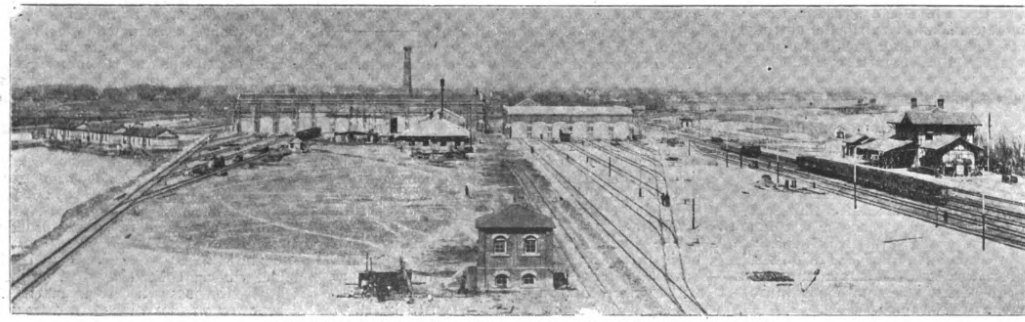


SHANGHAI-NANKING RAILWAY.—SOOCHOW STATION AND MACADAM ROAD TO CITY

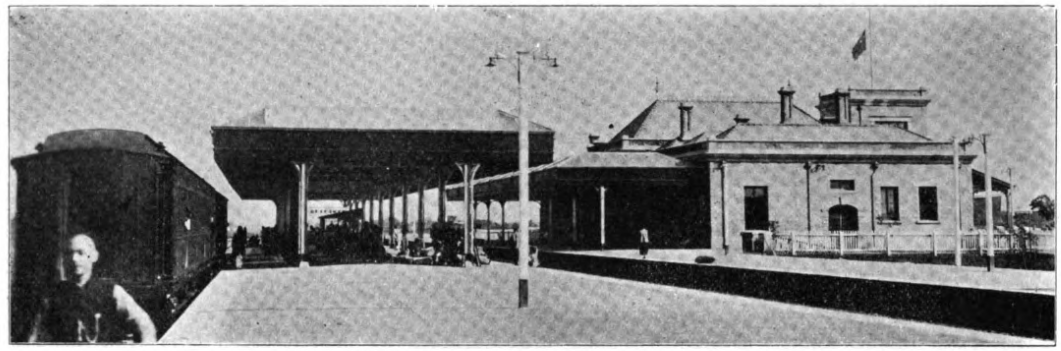
be expected in crossing an alluvial plain, necessitating heavy charges for cofferdam, timbering and pumping work. Many of the foundations had to be piled, and in the smaller openings concrete inverts and apron walls were found necessary.

Two typical cofferdams are illustrated.

The chief difference between this cofferdam and others lies in the fact that the inner line of piles is packed in the puddle and not inside the foundation. Two rows of piles were driven into the bed of the creek round the top of the inside row, at water-level was bolted a 12′×6′ waling leaving a rectangle inside of 49′ 9″×18′ 3″. Two sets of framing, consisting of 12″×6″ timbers were bolted and strapped together and floated in the water inside the cofferdam. This framing was constructed so as to leave 3″ clearance all round to allow sheet piling to be driven between it and



SHANGHAI-NANKING RAILWAY.—THE SHOPS AT WOOSUNG



SHANGHAI-NANKING RAILWAY.—SOOCHOW STATION

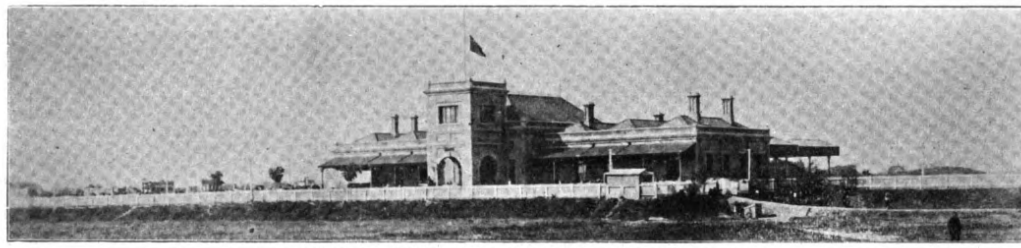
the waling. The two frames were exactly similar, the top one floating in the water was bolted through the waling and piles, leaving 3″ clearance for the sheet piling. The lowest frame was weighted and sunk as far as possible without the aid of a diving costume and kept down by distance pieces from the top frame. Sheet piling was then driven, the outside row of piling was kept from bulging outwards by a waling sunk with stirrups round two piles, being kept down by a wedge driven between the waling, the stirrup and the pile.

This form of cofferdam proved most economical in operation, one, I am informed by Mr. A. C. Clear, who introduced the type on the 1″ poling boards with walings at 4 ft. centres being used, and the concrete spread over a large area to obviate the use of piles put in. Three cofferdams were constructed for carrying out the central pier foundations, the maximum head of water being 15 ft. The rest of the work was carried out in brickwork in cement with concrete facings and copyings. The arches were turned in a mixture of lime and cement mortar, the backing being of cement concrete, cement rendered and tarred. The total cost of this bridge was $116,451.34. Of this sum the foundations, including cofferdams, steam pumps and plant, cost $50,194.75. 1,249 barrels of cement were used in the work.

cross girders and longitudinal rail bearers. The erection was carried out entirely by Chinese labor under European supervision, the girders being rivetted up on the embankment and launched into position on timber baulks supported on temporary sleeper cribs. The cost of this bridge was $67,419.74.

Several of the bridges in the neighbourhood of Soochow are of interest, more particularly Nos. 105, 108, 109 and 110, the latter two being the only skew girder bridges constructed on the railway, the cost of these amounted respectively to $59,281.83, $50,469.51, $30,506.53 and $33,283.17.

Another major bridge is No. 231, over the



SHANGHAI-NANKING RAILWAY.—SOOCHOW STATION

work, having been drawn and used in 8 or 9 different foundations.

The other cofferdam needs no description, being of the usual type excepting that the sheet piling is birdsmouthed, the author having introduced this joint in this part of the country.

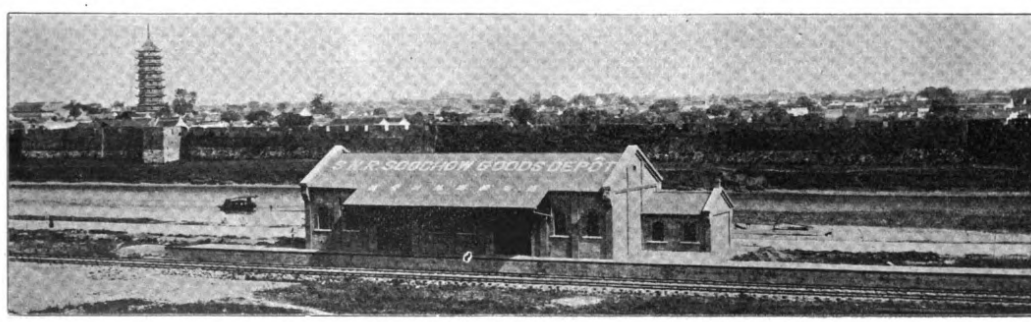
The bridge No. 55 at mile 30 is the first of any importance where the railway crosses the Hsin Yong Kong. The double line bridge consists of four through girder spans of 40 ft. with two 20 ft. arches on either side. The foundations for the arches were carried out in the following manner:—

An embankment was tipped out over the area of the six pier foundations and timber trenches were sunk through this embankment,

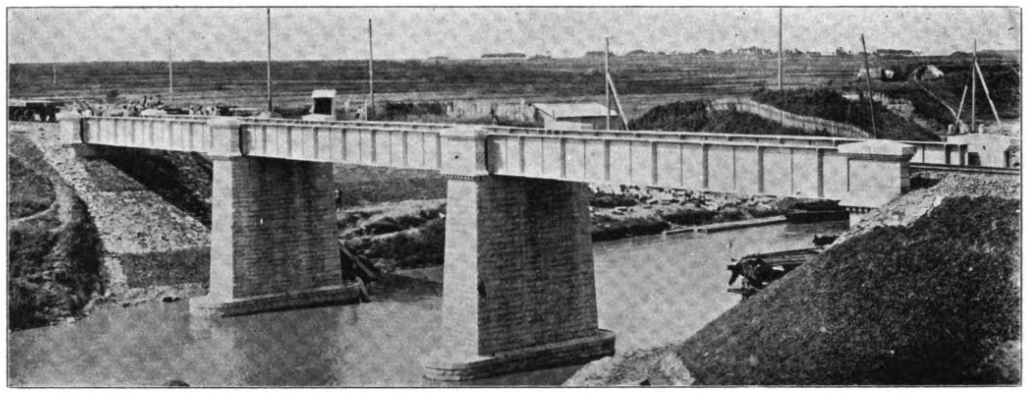
The next major bridge, No. 68, over the Grand Canal, west of Quinsan, consists of three through girder spans of 60 ft. The foundations for the piers were put down in cofferdams, in cement concrete, the abutment piers being built in the dry with ordinary timbering. The substructure is composed of coursed granite masonry in cement with granite ashlar pilaster caps and string courses. The depth from under side of girder to the Canal bed is 26 ft. leaving a clear headway at high water level of 15 ft., the central piers have circular cut waters carried up above high water level. The main piers are 35 ft. × 6 ft. 6 ins. × 26 ft. from top of concrete. The steel girders are of the through type with one centre girder and two face girders,

Grand Canal, excepting that the masonry piers above cut water level are battered on all faces, and the bridge is for a single line of railway. The height from underside of girder to creek bed is 38 ft. with a clear headway above high water line of 25 ft., the height of pier from top of concrete to girder level being 35 ft., cost $43,359.49.

A reinforced cement concrete skew arch road bridge was erected over the canal at Soochow to carry the station road approach. The abutments were constructed with the granite from the old foot bridge, near the site of the bridge, the spandrils and arch being built in cement concrete reinforced with corrugated steel rods interlaced with wire. The total cost of this bridge was $12,145.09, including the pulling



SHANGHAI-NANKING RAILWAY.—SOOCHOW GOODS DEPOT



SHANGHAI-NANKING RAILWAY.—TWO PIER GIRDER BRIDGE OVER CANAL

down of the old bridge, cofferdams for the new abutments, dredging, etc. The proportions of the concrete used were as follows:

Foundations	1.	3.	7.
Backing to abutments and spandrils	1.	3.	6.
Arch ring	1.	3.	4.

The cost per fong of these proportions work out at $38.84, total cost per fong in superstructure, including all material, shuttering, cleaning down, etc., corrugated steel and iron, work out at $56.77 per fong.

Materials.—The cement used was supplied by the Green Island Cement Co.; the cost, including freight and insurance, landing and transport charges to the site of the work, averaged $5.00 (mex.) per barrel.

Bricks were obtained chiefly from the kilns in the Kashing district; stone for concrete, Soochow granite; sand from mile 1 to Chinkiang had to be obtained from the Chusan Islands,—Yellow Ningpo sand—at the Nanking end of the work sand from the Poyang Lake was used.

The following rates for work represent a fair average:—

	Per fong.
Cement concrete, inclusive of cement, including all other materials and labor	$22.00
Brickwork in cement including cost of cement	32.00
Coursed granite rubble masonry in cement	42.00
	Per cub. ft.
Granite Ashlar in copings and bedstones set	2.75

Altogether tons 1,885, 5 cwts., 0 qrs., 14 lbs. of built up steel girders have been erected, the f.o.b. prices in England varying from in September, 1904, £9.6.6. per ton, August, 1906, £10.12.6, and January, 1907, £11.10.0, the increase representing a corresponding rise in steel during the period.

The total cost of the bridges per mile works out as follows:

From mile 1 to 56	$19,332.21
From mile 56 to 80	16,894,11
From mile 80 to 144	10,385.81
From mile 144 to Nanking	10,900.00

Fencing.—Following the usual custom in China, the main line is unfenced, boundary stones denoting the limits of land acquired, and fencing has been erected only at important stations and yards. The workshop yard at Woosung is enclosed with unclimbable corrugated iron fencing 6 ft. high with wrought iron posts and struts, a similar type being used at the locomotive yard, Shanghai, and the Markham Road storeyards. The Shanghai station approach roads are fenced with unclimbable wrought iron fencing 6 ft. high, while wire fencing has been used with wrought iron posts and straining pillars in conjunction with ditching to protect the railway property. Open pale and arris fencing 5 ft. high has been used for Station platforms, timber from cofferdams, etc., having been economically utilized. The cost per mile including boundary stones and all signs works out at $169 per mile.

Electric Telegraph.—By mutual agreement with the Imperial Chinese Telegraph Administration the main line of posts and wires to Nanking was constructed by the latter administration, the railway paying a proportionate cost of the total according to the number of wires used. All instruments and connections were supplied and fitted by the railway. The instruments used are Open Circuit Morse Inkwriters, P. O. Galvanometers, 4-line lightning conductors and 4-line commutators, the batterries being Leclanche. The cost per mile inclusive equals $297 per mile.

Track.—The permanent way consists of 85 lb. flat footed steel rails 36 foot long, 5¼ inches deep, flang 4⅝ inches wide, head 2⅝ inches wide, web 0-16 inches thick, steel fishplates 1 foot, 10 inches long, with four bolt holes at 6′ centres, steel fishbolts 1″ diameter 5¼″ over all screwed 2¼ special hexagonal nuts 1¾″ over squares by 1¼″ long with washer stamped on. Wrought iron spikes Chisel pointed 1¼″, 5 13-16″ over all ¾″ square. The main line sleepers are of Tarrah 0′ 0″ × 10″ × 5″ spaced 14 to a 36 foot rail or 2,060 per mile. Siding sleepers of the same wood 8′ 0″ × 9″ × 5″ spaced at 3′ 0″ centres of 1,760 per mile.

The line is ballasted throughout with bottom ballast consisting of large stones about 12″ × 6″ × 8″ deep, hand packed, the top ballast broken stone to pass a 2″ ring; from mile 1 to 144 the ballast is almost entirely Soochow granite brought by boat from the Kinshan and other quarries in the hills the Tai Hu Lake; from mile 144 to Nanking the ballas was quarried from the hills in the vicinity of the Railway and transported by wheelbarrow or on donkeys.

The f. o. b. price of rails in England varied from £4 in October, 1904, (100 miles of rails were purchased at this price) to £6.7.6 in March 1906, (100 miles purchased) and £6.12.6 in May 1907, or 63% higher than the prices ruling in 1904 when both the agents and the author strongly recommended that the whole quantity required for the railway should be purchased

The sleepers were purchased at rates c. f. i, varying from 6s. 1¼d. for the smaller size to 7s. 1½d. s.d. for the larger. The life of a Tarrah sleeper is unknown in this country, but in similar climates 20 to 25 years or even longer is reckoned upon and the writer sees no reason to doubt why with equal climatic conditions and good ballast this period may not be looked forward to here, so that their adoption, though more costly in the first instance than Japanese with a life of 3 to 5 years should in the end prove a most profitable investment.

All sleepers were machine drilled for spikes before being sent out of the store yard, the machine being belt driven by a 12 H. P. portable steam engine.

The cost of the ballast varied considerably in proportion to the transport, the following are fair average rates:—

Mile 0 to 56. $1.40 per ton placed on bank (=$5.60 per cub. fong)

Mile 56 to 80. Bottom Ballast delivered in stacks about 3 miles apart $3.92 per cub. fong, Top Ballast $4.32

Mile 80 to 116. Bottom Ballast $4.20 per cub fong, Top $4.60 per cub. fong delivered at Depots; placing on bank $1.50 per fong.

Mile 116 to 134. Ballast stacked continuously in cess. Bottom $5.60, top $6.00.

Mile 134 to 137. Bottom Ballast on bank to template $6.15 per fong, top 4 fongs per 100 on formation, remainder on cess, $6.65 per fong.

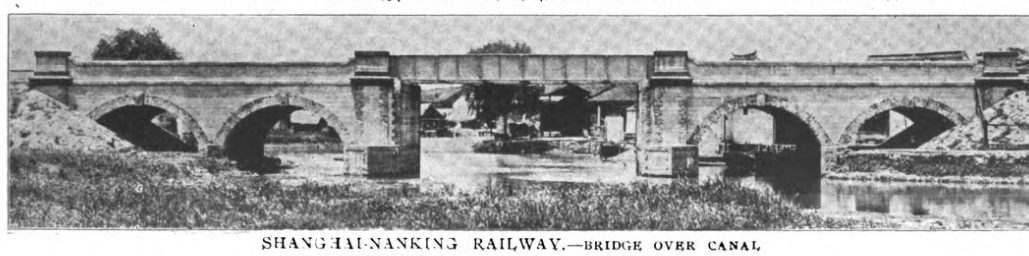
Mile 137 to 141. Bottom $6.20 per fong, on bank to template, Decauville supplied. Top in Depot $5.30 per fong.

Mile 141 to 144. Bottom on bank to template $7.00, Top along cess $7.00.

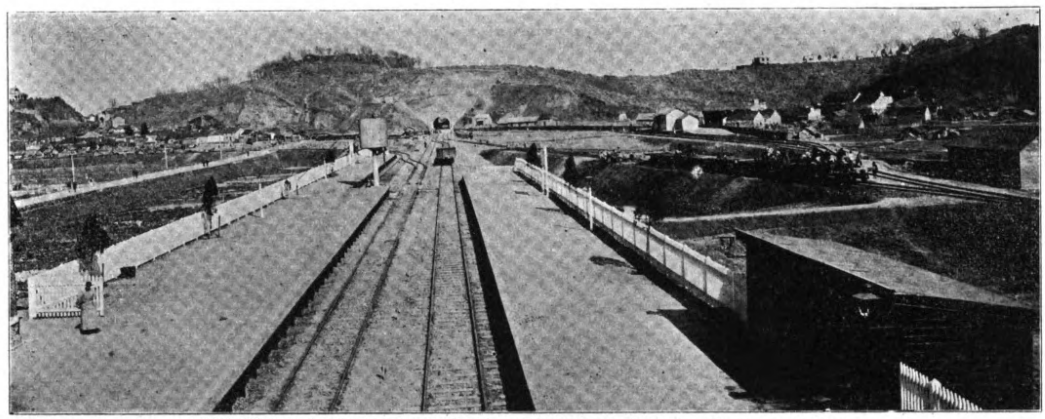
Mile 144 to 193. Average Bottom and Top Ballast $5.40 per fong on bank and in Depots.

The capital cost of the permanent way, including all materials, laying, lifting, boxing up and maintaining for an average of six months after opening for traffic, works out as follows:

	Per mile.
Mile 1 to 56	$34,828.49
Mile 56 to 80	20,236.85
Mile 80 to 144	26,601.60



SHANGHAI-NANKING RAILWAY.—BRIDGE OVER CANAL



SHANGHAI-NANKING RAILWAY.—CHINGKIANG STATION, VIEW OF TUNNEL

NOTE.—The mileage is calculated as measured on centre line which partly accounts for the excess in cost per mile from mile 1 to 56 which is due to the greater mileage of sidings and to the extra cost of ballast (about $4,000 per mile) due to transport charges.

The figures are not yet available from mile 144 to 193, the line having only recently been opened to traffic, but the Author anticipates the rate per mile will not exceed $26,000.

Chinkiang Tunnel.—The only tunnel on the line is situated at Chinkiang, the railway being carried through the Fort Hill on a falling gradient of 1 to 300 into Chinkiang station.

Many trial lines were run with the object of trying to eliminate the tunnel altogether, but it was exclusively proved that it was quite impossible to approach Chinkiang city excepting on a back shunt, the additional cost of which would have exceeded the cost of the tunnel work.

The question of constructing a single or double line tunnel in the first instance was duly considered in 1904, and it was unanimously agreed that a double line tunnel should be built.

The original length of tunnel was fixed at 500 yards, but this was subsequently modified, the approach cuttings at either end being extended, and the tunnel as built measures 1,320 feet from face to face.

The strata passed through for nearly the entire length consists of a shaly sandstone rock having several faults and streaks of graphite with pockets of China clay.

The shaly nature of the rock necessitated the arching of the roof throughout the entire length of the tunnel and also lining the side walls which work was carried out in brickwork in cement; no invert was, however, deemed necessary.

The dimensions of the tunnel section are as follows:—

28′ 2 3-16″ wide at arch spring, 27′ 3″ at rail level, height from rail level to soffit of arch 21.2″.

The following method of construction was adopted:—

A trial shaft was sunk at about the centre of the tunnel work starting on the 17th July, 1905, rock being encountered at a depth of 50 ft. below surface on the 24th of that month. By the end of August the shaft had reached a depth of 85 ft. or below the crown of the tunnel. Work was started in August on driving the bottom heading at the west face of the tunnel. By the end of September the shaft had reached its full depth, water being encountered at about rail level or 115 ft. from the surface. The shaft was circular, 8 ft. in diameter, lined with brickwork cement for the first 50 ft. to the rock. A bottom heading, 8′ 6″ at the base and 6′ 6″ high, was commenced in both directions, that is, east and west, a small amount of water being met which was, however, easily dealt with; the rate of progress being at first about 2 ft. a day in either direction, and 4 ft. a day in the heading from the west face. By the end of the year 1905, 425 ft. of heading had been driven. The headings from the shaft and west face met in May 1906, an excavation for a shaft length was immediately commenced. During the next few months the progress of the work was more rapid, the Chinese miners who at first were quite unaccustomed to the work had gained more experience under European supervision. At the end of the year 190 ft. of tunnel had been excavated and lined and break ups started between the shaft and the east face, giving in all 6 working faces. In May 1907 a record length, namely 190′ 6″ was reported.

The tunnel was completed, the first engine running through, on February 27th, 1908.

It is worthy of record that during the progress of the work not one single fatal accident occurred, this being an exception in the author's experience of tunnel work, even in England, where trained workmen are available.

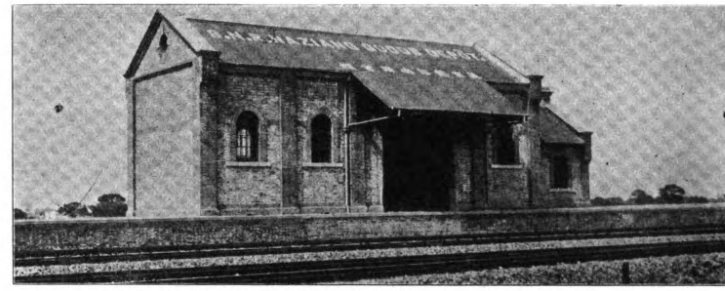
The whole of the excavation and brickwork in the Tunnel was carried out by Chinese labor under European supervision. Work was greatly facilitated by the adoption of electric lighting.

The fronts are faced with cement concrete blocks with copings and string courses of the same material.

The total cost of the tunnel amounted to $370,000 which figure may in all probability be slightly reduced by a credit from sale of plant. In this connection it is interesting to note that several tenders from European firms were received in the early stages of the work for the construction of a single line tunnel 500 yards in length, the lowest of which, including cutting approaches, amounted to £60,000 or approximately $600,000.

Stations and Buildings.—It would be quite possible to write a paper on this subject alone, and the author feels that he cannot more than briefly describe the works under this heading.

Workshops.—The locomotve erecting and carriage building workshops have been constructed at Woosung near the Whangpoo River bank where the Railway possesses large water frontage, and where a jetty with two lines of rails equipped with shearlegs and crane for landing heavy materials was constructed in the early stages of the work.



SHANGHAI-NANKING RAILWAY.—NAZIANG GOODS STATION

The principal buildings are:—

The erecting shop, 160′ long×140′ wide, having 4 lines of pits and one through road for materials, adjoining the machine, smith and boiler shop, 120′×120′; the power house, 40′×40′; and boiler house, 46′×47′, being under the same roof. The height of the building from floor to roof truss is 33′ 7¾″. The machine shop is equipped with modern machinery electrically driven, a description will be given later on of the installation. The foundry has an area of 3,200 feet, being 80′ long×40′ wide; saw mill 80′×40′; carriage, repair and paint shop, 160′ long×120′ wide; carriage building shop, 120′×120′; store, 120′×40′; locomotive superintendent's office, 100′×45′.

All the buildings are constructed of brick on cement concrete foundations carried on piles, corrugated iron roofing, the erecting, machine and smiths, carriage and paint shops being built with northern lights glazed with Mellows patent glazing bars and quarter rough rolled plate glass.

The roofing is carried on steel stancheons at 40 feet centres in both directions, the intermediate trusses being carried on steel lattice girders. The two 20-tons electrically driven cranes traversing the entire length of the erecting, boiler and machine shops are carried on steel plate girders. An 18-ton hand travelling crane is provided in the carriage repair shop.

The floor of the machine shop is laid with hardwood blocks, the other principal buildings being floored with concrete cement finish.

The cost of the principal buildings was as follows:—

Erecting, Machine, Smith and Boiler Shops, Power and Boiler Houses	$187,535.83
Carriage and Paint Shop	49,512.62
Foundry	12,051.38
Saw Mill	8,581.98
Locomotive Superintendent's Office	15,997.97
Store Building	13,055.57

Stations.—There are 37 stations between Shanghai and Nanking inclusive, which may be briefly classified as follows:—

1. Passing stations, provided with loops 2,500 feet in length for crossing trains and up and down passenger platforms, there are 25 of these; of this total 9 are provided with locomotive water supplies and ashpits, and 4 are engine changing stations with running sheds, turntables, coal stages, etc., 10 are goods stations with goods sheds and platforms, offices siding accommodation, 3 of these in addition have cattle docks and pens, and 3 stations are provided with 60-ton weighbridges.

2. Flag stations, provided with one platform and buildings commensurate with traffic requirements, no siding or passing accommodations. There are 12 of this type.

Station Buildings.—Three types [of buildings have been generally adopted.

Those erected at stations where the passenger traffic is considerable consist of a single storied building with 6 rooms, namely, a general hall, booking office and telegraph room, station master's office, post office or goods agent, and two small waiting rooms.

The floors of the buildings in all cases have been fixed at platform level, which is carried up 2′ 3″ higher than rail level. The corrugated iron roofing was carried out on either front of the building to form a verandah.

There are five of this type of building between mile 1 and 144. The cost varied in accordance with the depth below platform level from $7,-973.65 to $12,241.98; the average for the five buildings being $8,583.

One type is practically half size of the building already described, being designed so that it can be easily extended should circumstances require. It contains 3 rooms, namely, a general hall, booking office, station master's and telegraph office.

Ten of these buildings have been erected at a cost varying from $3,988.90 to $9,943.94, the average for the ten being $6,050.

The last is a type which has been used at Wusieh, Changchow and Tanyang with slight modification, but at these stations only a single story has been erected; the building illustrated has been erected at Nanking, the upper stories being used for staff quarters.

The author considers this building most suitable for this country, the large covered waiting area between the two blocks of buildings being greatly appreciated by the Chinese travelling public.

The average cost of the one-storied building works out at $22,047.32.

Special buildings have been designed for Shanghai and Soochow.

At Shanghai a new passenger building, with four floors for general offices, is being erected from design prepared by Mr. Charles E. Barry, F.R.I.B.A., of London.

The work is not sufficiently advanced to give details of cost.

The main walls of the building have been carried up to first floor level, the foundations of this work having been done departmentally. The building to first floor level to a height of 21 ft. has been faced on three sides with Tsingtao granite. The foundations are in cement concrete on piles. A contract has recently been let to a native contractor to complete the building.

Steel stancheons supporting the girders carrying the main walls above the first floor are founded on armoured concrete on piles. The whole of the building will be of fire proof construction with steel joists and concrete floors.

The passenger platforms at Shanghai have been completed and consist of one island platform 1,450 ft. in length, and shorter platform forming one side of the bay 650 ft. long. There will be an open space in front of the building 100 ft. wide, and it is proposed to cover this area and one of the platforms with an awning roof.

The platform walls are of brickwork in lime corbled out at the top to support the concrete coping which projects 12″ from the face of the wall being 2′ 3″ above rail level. These copings were cast in moulds at Soochow at a cost of 60 dollar cents per cubic ft. They are 3′ long × 2.9″ wide, 5″ thick at the back, and 4½″ at the face, the upper edge of which is bull nosed. They are fluted on the surface to prevent slipping. The type of wall and coping has been adopted at the majority of stations between Shanghai and Chinkiang. The total cost of platforms at Shanghai, inclusive of all filling, walls, and coping was $16,612.22.

Considerable work had to be carried out in making new approach roads to the Station, and this has been done so as to facilitate in every way easy access for traffic. The Shanghai Electric Tramway runs past the station, and when the service is in working order will prove of great benefit to railway passengers.

The other principal buildings which have been erected at Shanghai are the locomotive running shed, 220′ long × 100′ wide, with accommodation for 12 main line engines, the shed is provided with continuous pits and four roads fitted with hydrants for washing out boilers, foreman's offices, running room, mess room and quarters for the staff, together with a machine shop for small repairs. The roof is of timber with unequal sided trusses, the northern lights being glazed, the other side covered with corrugated iron. The whole of the foundations were in cement concrete on piles.

The total cost of the running shed amounted to $62,455.97.

The carriage cleaning shed, 370′ long × 61′ 3″ wide, to hold 12 main line coaches, is provided with water troughs heated by steam from a locomotive boiler with 3 lines of pits for the entire length of the building; which is constructed of timber on a brick plinth with wooden columns carrying the roofs, the latter being of corrugated iron. The flooring is of cement concrete, cement finished.

The total cost was $28,548.18.

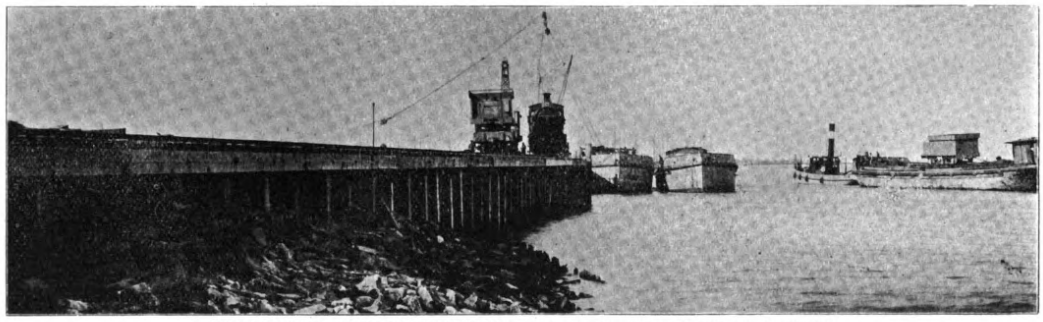
The electrical power house, including boiler house and store offices 132′ long × 46′ wide, built of brick with steel truss roofs covered with corrugated iron. The dynamo room has a tiled floor.

Cost of building $19,219.60.

The usual quarters have been provided for the native and foreign staffs.

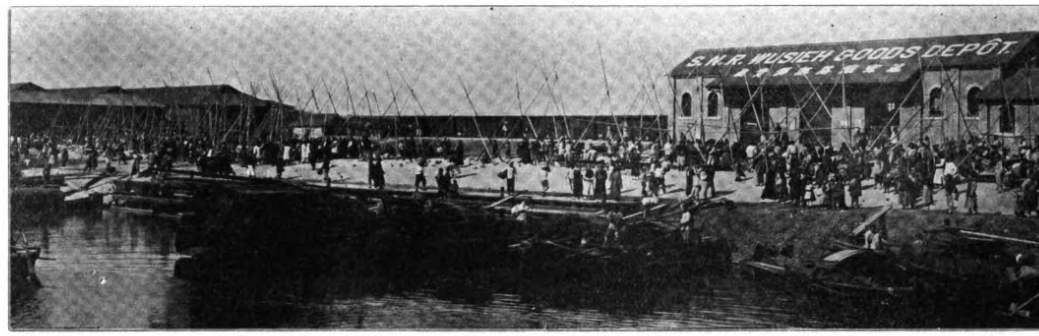
Soochow Station.—This building was designed to accommodate the very considerable passenger traffic at this important station.

It is a one-storied building and consists of a central concourse area 63′ long × 35′ wide, with 6 ticket windows and contains on one side the usual offices, namely, telegraph, station master, booking office, parcels, strong room, dispensary, medical officer, porters and guards' room, the latter four rooms being entered from a separate passage way. On the other, or west, side of the building official waiting rooms, ladies' wait-

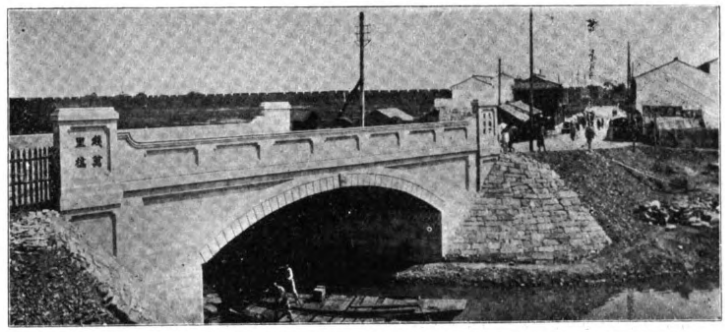


SHANGHAI-NANKING RAILWAY.—DEEP WATER TERMINUS AT WOOSUNG

SHANGHAI-NANKING RAILWAY.—ARCHED BRIDGE OVER CANAL

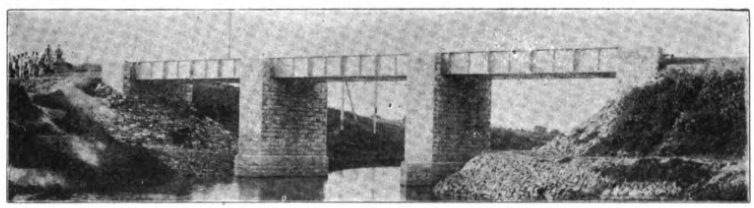


SHANGHAI-NANKING RAILWAY.—WUSIEH GOODS DEPOT



SHANGHAI-NANKING RAILWAY.—CONCRETE ROADWAY BRIDGE AT SOOCHOW

SHANGHAI-NANKING RAILWAY.—THE RAILWAY SCHOOL AT SOOCHOW



SHANGHAI-NANKING RAILWAY.—TWO PIER GIRDER BRIDGE OVER CREEK

ing room, refreshment room and kitchen are provided.

The foundations are in concrete and the main walls carried up on arches to below platform level.

The building is in brickwork in lime, the exterior faced with blue brick with cast concrete plinths, chamfered quoins, moulded string courses and copings. The interiors of the concourse area and corridors are faced in red brickwork, pointed in white lime mortar, the other rooms have plaster walls and ceilings. The roof is covered with red tiles.

The total cost of this building, inclusive of deep foundations, was $71,532.

The station is provided with two platforms 850 ft. in length, the up platform being an island one.

A subway under the main line between the two platforms is provided, this work is carried out in concrete the rails being carried on through steel girders. The platforms are carried over the subway on old steel sleepers bedded in concrete. The cost of this subway complete was $7,191.45.

The whole of the station site had to be raised four or five feet the land having originally been low lying under paddy.

Considerable expense had to be incurred in constructing a macadamised road approach to the station building, the cost has, however, been fully justified, more particularly owing to the fact that the local authorities of Soochow have extended their maloo from the Cheng Men Gate and joined up with the railway road, it being now possible to drive in a carriage from the railway station right round the west and south walls of the City, a distance of nearly 6 miles.

At all stations permanent brick quarters have been provided for the station staff at an average cost of $1,850 per building. At some of the principal stations overhead footbridges have been built, the steel lattice bridge at Wusieh was erected at a cost of $3,452.98, at the other stations timber bridges have been built: average cost $320 each.

Station Machinery.—Locomotive Water Supply.—At Shanghai station four cast iron tanks each of 10,000 gallon capacity have been erected on a brick tankhouse, the bottom of the tanks being 40 feet above rail level; water is taken from the Shanghai Water Co., by a 9′ cast iron main. A 9′ main from this tank supplies the pillar water cranes at the engine shed and the hydrants and other service in the yard. A 3,500 gallon parachute water tank has been erected at the NE. end of the station to supply the engines on the Woosung Branch, these tanks discharge their contents in 1½ minutes.

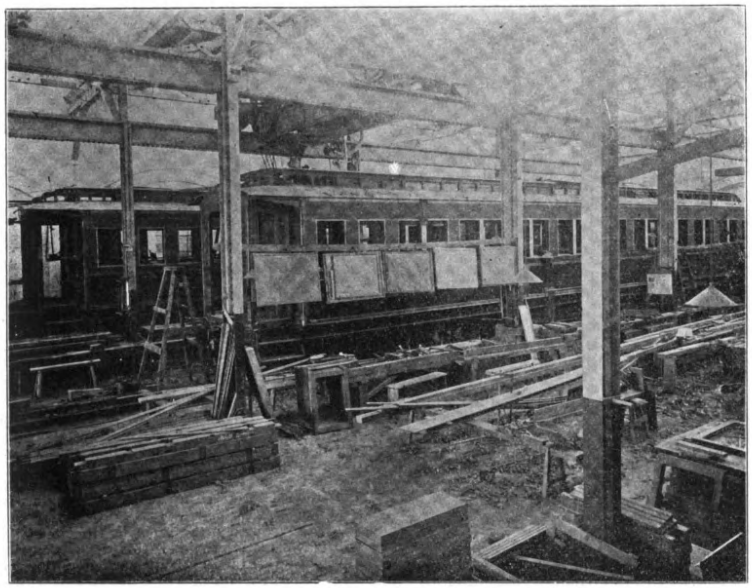
At the smaller watering stations, 10,000 gallon tanks have been erected supplied from settling tanks connected by pipe to nearest creek, the water being pumped into the tank in some instances by hand, but at the larger stations as Wusieh, Changchow, Chinkiang and Nanking by direct acting self contained steam pumps with vertical boilers, the f.o.b. price of these being £126.5.0. each complete.

At Soochow, where current is available an electrically driven pump has been supplied.

At all watering stations other than engine changing where the engines are supplied at the shed by water cranes, 3,500 gallon parachute tanks are erected by the ashpits at one end of each platform.

TURNTABLES are 60 ft. diameter of the central balance descriptions founded on cement concrete with race walls of the same material; the f.o.b. price was £373, and including erection and foundations averaged $6,000.

Signaling.—Distant and home semaphore signals have been erected at all passing stations



SHANGHAI-NANKING RAILWAY.—INTERIOR OF CAR SHOPS AT WOOSUNG

controlled by levers from a locking frame in the station building, the home signals being interlocked and all facing points handlocked and detected; this work has been entirely done locally, chiefly at Soochow under the supervision of Mr. A. C Clear, Executive Engineer, who has received able assistance from Mr. Yang, Assistant Engineer

Owing to the nature of the country from Shanghai to Nanking, hardly without exception the only possible sites were in low swampy ground which had to be raised, increasing the cost of foundation work generally.

Exclusive of Woosung shops and Shanghai the total cost to date of stations and buildings of all descriptions, such as staff quarters, engine sheds, godowns, platforms, passenger buildings (including all fixtures and furniture), station machinery with points and crossings, water supplies, weighbridges, signals, etc., etc., was as follows:—

		Per mile.
Mile 1 to 56.....	$496,904.82 =	$9,034.62
Mile 56 to 80.....	153,335.93 =	6,389.00
Mile 80 to 144.....	230,747.10 =	3,605.42
Mile 144 to 193.....	330,500.00 =	6,610.00

These figures are not final as there still remains some work of minor importance, however, to complete.

Plant. — Electrical Installations. — Woosung Workshops.—Erecting and small Machine Shops.—10 H. P. motor 600 R. P. M. belt driving on to countershaft running miscellaneous machines, such as milling, drilling, capstan and key way cutting machines, bolt and brass finishers, lathes, emery wheels and universal grinder.

25 H. P. motor 550 R. P. M. belt driving on to main shaft driving shaping and planing machines, drillers and screw cutting lathes and hydraulic wheel press.

27 H. P. variable speed motor 750-1000 R. P. M. driving through raw hide gearing to large wheel lathe.

22 H. P. variable speed motor 500-1000 R. P.M. direct coupled to countershaft of tyre grinding machine.

Smithy.—25 H. P. motor 550 R.P.M. and 10 H. P. motor 600 R.P.M. driving on to main shaft driving, plate roller, plate bender, band saw, punching and shearing machines, radial drill and blowers.

Saw Mill.—20 H. P. motor 550 R. P. M. belt driving on to countershaft running wood planer, band and circular saws and pattern makers lathe

The whole of the above motors are Dock Kerrs 4 pole shunt wound semi-enclosed type 220 volts, working in conjunction with Reyeolle fool proof starters.

The erecting shop and smithy are served by two 20-ton electric cranes of 3 motor type, E. C. C. pattern series wound motors having 15 H. P. motors for elevating, 8 H. P. for travelling and 4 H. P. for cross traversing, each being regulated and controlled through K type controllers.

There are about 500 16 C. P. lamps installed in the various buildings and 14 arc lamps, while the yard is provided with 5 circuits each of four 15 ampere Angold open type arcs.

The whole of the internal wiring is run in heavy screwed steel conduit and so far after 15 months working have not been troubled with condensation, though every precaution has been taken to eliminate this defect so prevalent in climates such as this. The whole of the outdoor wiring is carried out with solid bare copper wires run on treble shed insulators, utilizing wires of from No. 1 S.W.G. to No. 9.

Power House.—The boiler house is equipped with 2 Yates and Thom Lancashire boilers 28′ long×7′ 6″ diameter, designed for a working pressure of 120 lbs. per square inch.

In the engine room are two 150 K. W. Compound Belliss engines running at 425 R.P.M. each direct coupled to a compound wound 220 to 420 volt Bruce Peebles dynamo capable of giving out 680 amperes.

The control and distribution is controlled by a Kelvin & White switchboard, the power circuits being distinct from the lighting circuits, each sub circuit being protected by an automatic circuit breaker on one pole and a fuse on the other, while each dynamo panel is fitted with a maximum and reverse circuit breaker, on one pole and a fuse on the other these machines can be run in parallel, though at present the load does not require it.

There has just been erected a new saw mill which will be fitted with a log frame saw driven by a 12 H. P. motor of similar design to those above.

Total cost of installation including boilers, engines, dynamos, etc., and all labor complete, $77,935.58

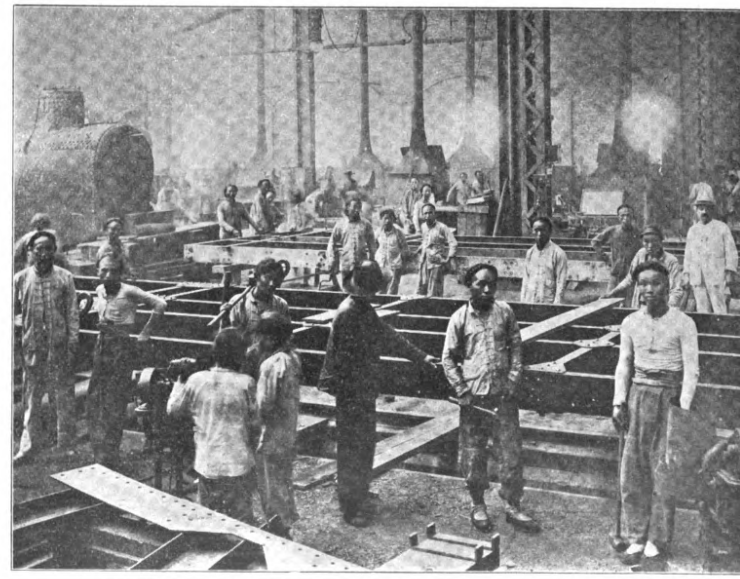
Shanghai Terminus and Goods Yard, Lighting.—In the power house are installed 2 Penman Lancashire Boilers 2″ long×7′ 6″ diameter working at a pressure of 120 lbs. to the square inch, working in conjunction with a Greens economiser electrically driven, supplying steam to two 85 K.W. Compound Belliss engines running at 425 R.P.M. each direct coupled to a E.C.C. compound wound interpole dynamo generating at a pressure of 440 to 460 volts.

As we shall be distributing our energy from here on the 3 wire system, a 66 K.W. Balancer is erected to compensate for the out of balance.

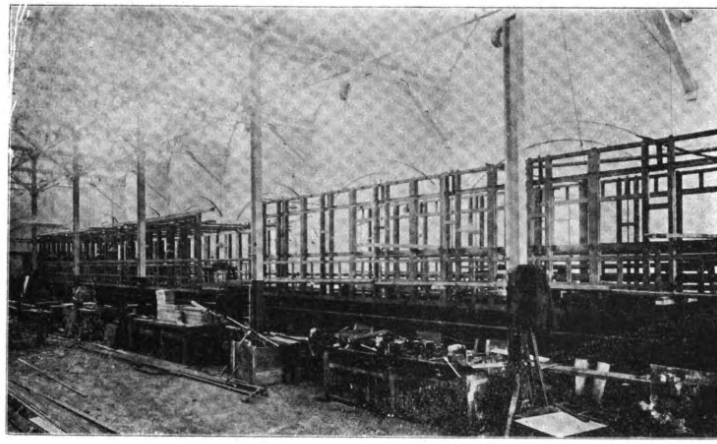
The approach road, platforms, goods and shunting yards are illuminated by circuits of eight 10 ampere Santoni flame lamps in series, capable of burning about 16 hours without renewal of carbons.

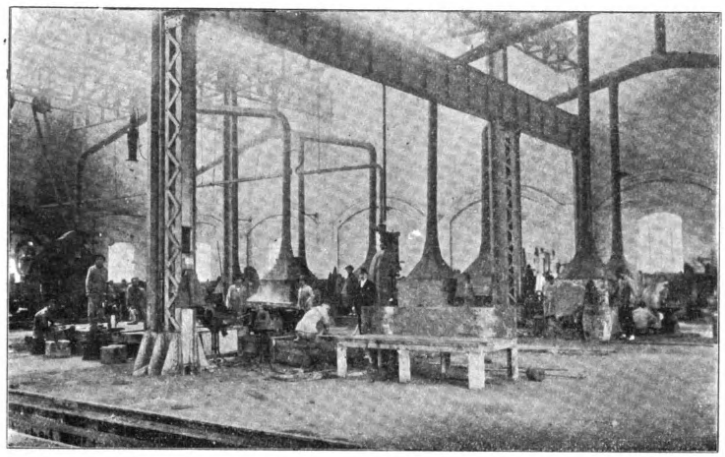
The carriage and running sheds are lit by means of 8 ampere Santoni enclosed arcs two in series on 220 V.

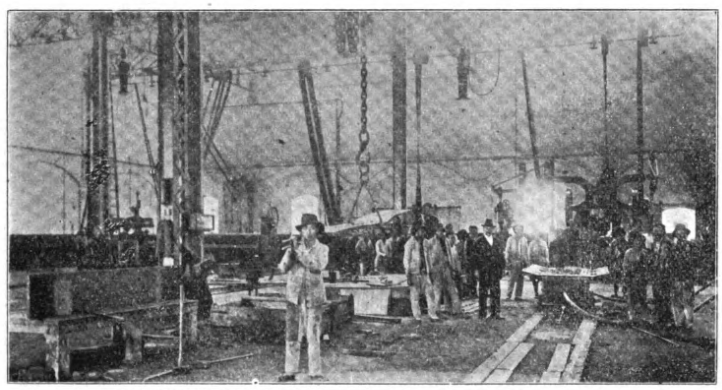
The work in this district is still proceeding and when the new station buildings and goods



SHANGHAI-NANKING RAILWAY.—CAR AND LOCOMOTIVE SHOP







SHANGHAI-NANKING RAILWAY.—WOOSUNG CAR SHOPS

sheds are completed will have a lamp connection of about 800 16 C.P. lamps 64 arc lamps.

Ample room is provided in the boiler and engine rooms for extensions, but at present the maximum load is only about 35 to 40 K.W.

Adjoining this power house there is now in course of construction of head trains lighting depot where all erection and maitenance of the cells and dynamos used in train lighting will be carried out, also the testing of dynamos and charging of cel's.

Total cost to date $65,759.68.

Soochow.—The power house here is equipped with two 25 N.H P. Ruston Proctor Loco. type boiler, 120 lns. per square inch, supplying steam to a 30 K.W. Compound Belliss engine direct coupled to an E.C.C. compound wound multipolar interpole generator supplying current at a pressure of 220-230 volts. Room is provided for an additional set, though for the present it is not proposed to be fitted.

The current is distributed from a Crompton switch board of their standard design for 5 feeders.

The work here is in progress of erection, though we have fitted and in operation the station buildings with incandescent lamps equal to about 200 16 C.P. while the approach road is illuminated by about 20 32 C.P. glow lamps.

The running shed and staff quarters are to be illuminated electrically and an electric pump is provided for the tank house.

Rolling Stock.—Locomotives. Three types are in use on the Railway.

A Class. Tank engines, 6 wheel coupled, 18″ cylinders, 26″ stroke, 4′ 9″ wheels. Full working weight 74 tons.

B Class. Goods Tender Engines, 6 wheel coupled, 18″ cylinders, 26″ stroke, 4′ 9″ wheels. Full working weight 102 tons.

C Class. Passenger Tender Engines, 4 wheel coupled, 18″ cylinder, 26″ stroke, 6′ 7″ wheels, full working weight 98.35 tons.

Coaching Stock. All the Coaching Stock is of the 4 wheel bogie type, the following are the leading dimensions:—

	Feet.	*Ins.*
Length of underframe	68	0
Width over sole bars	9	5
Centres to centres of bogies	47	0
Wheel base of bogies	9	0
Diameter of wheels	3	6½
Length of body over mouldings	68	0¾
Width of body outside	10	0
Height from rail to floor level	4	5
Height from rail to coupler centre (loaded)	3	6
Height from rail to top of carriage	14	0

The carriages are entered at the vestibule ends and there is through communication from end to end of all passenger trains.

The buffing and draw gear is of the Janney Central Coupler type with buffing plates, etc. All cars are fitted with the Westinghouse Brake with improved valves and are electrically lighted by the Stones system; steam heating is provided from the engine. There are three classes, first, second and third. The first class Corridor Kitchen Cars have seating accommodation for 48, composite carriages for 50 first class and 42 second class, third class for 100, Composite Brake and Luggage Vans for 60, 3rd class and Composite Brake and Mail Vans for 40, 3rd class.

Wagon Stock.—Three types of goods wagons have been adopted.

All steel medium sided 4 wheel bogie wagons on 38 feet under-frames, 35 tons capacity.

All steel covered goods 4 wheel bogie wagons on 38 feet under-frames, 30 tons capacity.

All steel 4 wheel wagons on 18 feet under-frames, 15 tons capacity.

All steel bogie Brake Vans on 38 feet under-frames.

All stock is equipped with the Westinghouse Brake.

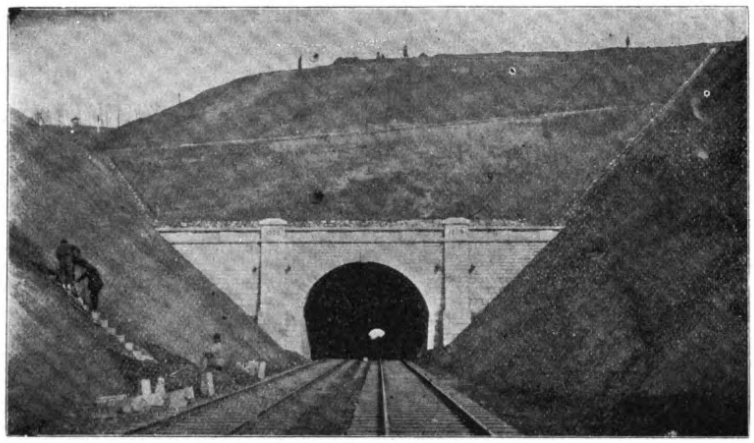
The following is the present equipment of the Railway excluding the old Woosung Stock, new stock building at Woosung, and construction locomotives:—

2 A. Class Engines.
10 B. Class Tender Engines.
12 C. Class Passenger Engines.
5 First Class Kitchen Cars.
5 First and Second Composites.
18 Third Class Cars.
5 Third Class Compo. Brake & Luggage Vans.
5 Third Class Compo. Brake & Mail Vans.
150 Medium sided Wagons.
40 Covered Goods Wagons.
50 4-Wheel Wagons.
12 Steel Brake Vans.

The whole of the Locomotives, Carriage and Wagons stock was designed and passed for shipment by the Consulting Engineers.

Electric Lighting of Coaching Stock.—The whole of the new rolling stock is equipped on the Stone's patent system of train lighting.

Briefly each coach is fitted with a dynamo and two batteries of storage cells, while stationary the lamps are lit off the cells and when running the dynamo supplies current to the lamps through a small resistance, one of the batteries at the same time receiving a small charge, while the other acts as a regulator to the lamps, our voltage being 24 volts on the lamps.



SHANGHAI-NANKING RAILWAY.—CHINGKIANG TUNNEL ENTRANCE

The principal feature of the system is the dynamo and its method of suspension, the dynamo being suspended by one corner of its frame by means of an adjustable link by which the dynamo can be drawn closer to, or taken further away from the pulley on the driving axle, so permitting of the machine being set for any required amount of current, this also prevents its exceeding that amount however the speed may increase.

The suspending link is adjusted so that the driving belt draws the dynamo out of the diagonal position in which it would naturally hang, thus putting a definite tension on the belt just sufficient to absorb power equivalent to the amount of electricity required. From this it will be seen that when the pull on the belt exceeds the weight on the belt (due to the increase of speed of the train) the dynamo will be automatically drawn towards the driving pulley on the axle (by virtue of its one sided suspension) and so allow the belt to slip whilst the armature will continue to revolve at its normal speed.

The dynamo always supplies current in the one direction, irrespective of which direction the coach may be travelling in, this is effected by means of a rocking arm switch.

When the dynamo reaches a certain speed, a centrifugal governor automatically connects first the dynamo field to the regulating battery and then the cells to be charged to the brushes of the dynamo.

Immediately this occurs and as the charging of the batteries commences, a resistance of correct value is connected in the lamp circuit and so prevents the lamps being overrun, due to the extra voltage required in charging the cells.

The rocking arm is also in connection with a see saw switch which changes over the battery with the direction of running, so that the charged battery becomes the regulating battery.

The act of switching off the car lights puts sets of batteries in parallel, when half the generated current passes half through each battery.

All the dynamos are ring oiled.

At the moment of writing there are 37 new coaches and one old type coach converted into an Inspection coach all of which are fitted each completely independently equipped aggregating just over 800 lamps of 8 and 5 C.P. and about 40 fans, the fans being fitted in the dining cars and 1st and 2nd Composites.

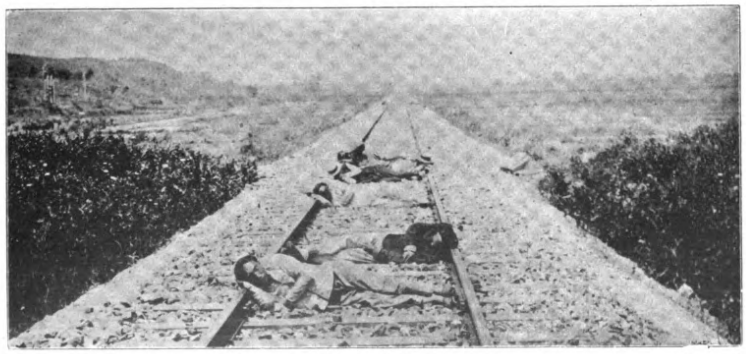
With regard to the old Woosung line stock, these have been made into 2 block trains each of 4 coaches, and lit up on the block train method, one brake van fitted with dynamo and cells as in the other coaches, utilizing flexible connections linking up with the roof wires of the 3 remaining coaches of that train.

It might be added that there are just over 1,000 storage cells already in daily operation in connection with this work.

The machines in use on the dining and composite cars, also block trains, are capable of giving out 80 amperes, while those of the thirds are designed for 40 amperes.

SUMMARY OF COST BY MAIN HEADS AND COST PER MILE WITH PERCENTAGES

Main Head.	Total cost to end of Feb. 1908.	Cost per Mile on Single Line basis.	%
	Tls.	Tls.	
I. PRELIMINARY EXPENSES	18,648.89	81.08	.122
II. LAND	1,836,917.74	7,986.60	11.990
III. FORMATION (Earthworks, Double line Tunnel, Creeks, Roads Tls. 1,567,262.37. Deduct 2-5 cost Earthwork Double line to Soochow Tls. 156,572.47	1,410,689.90	6,133.43	9.208
IV. BRIDGEWORK (Major and Minor Bridges, Culverts, Drains Tls. 1,934,375.71 Deduct 5-12 cost Bridgework Double line to Soochow 323,411.82	1,610,963.89	7,004.19	10.514
V. FENCING	38,922.93	169.23	.254
VI. ELECTRIC TELEGRAPH	51,692.17	224.75	.338
VII. TRACK	4,811,536.38	20,919.72	31.405
VIII. STATIONS AND BUILDINGS, Buildings and Fixtures, Station Machinery; Furniture Workshops and Stores, etc.	1,553,891.98	6,756.05	10.142
IX. PLANT, Construction, Locomotive, Carriage & Wagon Tools and Plant, Workshop Machinery and Electrical Plant, Engineering Tools and Plant, Steam launches, etc., printing	392,864.62	1,708.10	2.564
Locomotive, Carriage and Wagon Rolling Stock	2,026,120.45	8,809.22	13.224
X. GENERAL CHARGES, Engineering (including cost of survey) Accounts, Stores, Direction, Medical, Locomotive, Traffic, Chinese Department, Miscellaneous	1,568,862.90	6,821.15	10.239
	15,321,111.80	66,613.52	
Add 1-5 cost of Earthwork Soochow Double line 156,572.47.			
Add 5-12 Bridgework Soochow Double line 324,411.82	479,984.29	2,082.54	
TOTAL FINAL CONSTRUCTION HEADS	15,801,096.09	68,696.06	
Deduct 2-5 cost of Earthwork. Deduct 5-12 cost of Bridgework Soochow Double line	479,984.20	2,082.54	
	15,321,111.80	66,613.52	
ADD			
Commission purchases England	219,181.19	952.96	
Commission purchases China	111,808.45	486.12	
Nanyang College Donations	10,000.00	43.48	
Exchange account	56,151.99	244.14	
Likin confiscation accounts	3,825.64	16.64	
Land exchange account	9,247.34	40.21	
Total Taels	15,731,326.41	68,397.07	
MILEAGE, including Main Line Loops & Sidings, but excluding the Woosung Section		230 miles of Single Line.	
Average cost per mile, including land, construction and equipment		Taels 68,397.07	
@ an average rate of exchange of Tls. 7.08 per £ =		£9,661 per mile	
Average cost per mile, excluding land and rolling stock.		Tls. 15,731,326.41	
Land Tls. 1,836,917.74			
Rolling Stock 2,026,120.45		3,863,038.19	
		Tls. 11,868,288.22 = Taels 51,601.26	
@ an average rate of exchange of Tls. 7.08 per £ =		£7,288 per mile.	



THE LUXURY OF THE SHANGHAI-NANKING RAILWAY EXTENDS TO THE ROADBED, AND THE WOODEN SLEEPERS ARE AT TIMES HELD DOWN BY THE HUMAN VARIETY MUCH TO THE DISTASTE OF THE ENGINE DRIVERS, WHO MUST STOP THE TRAIN TO EXPLAIN TO THE COUNTRYMEN THAT THE TRACK IS NOT A FREE LODGING HOUSE.

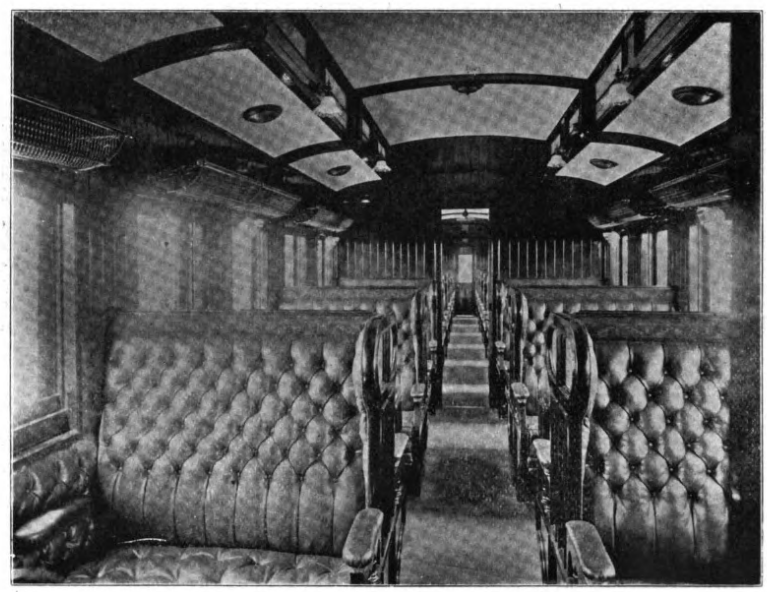
The above figures represent a fair statement of expenditure under construction heads proper. During the period of the work exchange fluctuated considerably and for the greater part of the time detrimentally against bringing sterling from Europe. The original estimates were based on Tls. 8 per £ sterling, but the average rate has been Tls. 7.08, or nearly 9% higher.

The writer commenced this paper by stating that the Loan Agreement authorized a loan not exceeding £3,250,000 at 90; the first instalment (£2,250,000 was issued at this rate of discount, but concessions were subsequently made and the second and last instalment, £650,000 was issued at 95½.

The total issue of loan funds to date being £2,900,000 nominal on which interest is payable, particulars being as follows:—

£2,250,000 @ 90	= £2,025,000	Discount	£225,000
650,000 @ 95½	= 620,750		29,250
£2,900,000]	£2,645,750]		£254,250

(= £1,105 per mile of Single line).



SHANGHAI-NANKING RAILWAY.—INTERIOR OF FIRST AND SECOND CLASS CAR. BUILT BY THE METROPOLITAN AMALGAMATED RAILWAY CARRIAGE CO., LTD.

Leaving the net sum of £2,645,750 available, of this amount the following sums were earmarked under the terms of the Agreement.

Woosung Railway.....	Tls. 1,000,000.00
Land.....	1,836,917.74
Loan Interest from Flotation to March 31, 1908.....	3,055,782.16
	Tls. 5,892,699.90

at exchange 7.08 = £832,302.

Equivalent to £3,619 per mile of single line.

Generally.—In carrying out the work every effort was made to standardize details and working parts as far as possible. The importance of this policy is fully recognized in railway construction in Europe and other foreign countries, and should be particularly emphasized in this country, where railways are practically in their infancy, so as to obviate the necessity which otherwise would exist of stocking a multiplicity of spare parts for repairs.

Organization.—The construction of the railway was carried out departmentally, the work being divided up into districts under the charge of an executive engineer, with assistant engineers in charge of sub-divisions.

The first division, from Woosung to mile 1, on the main line, was under the charge of Mr. M. R. Sinclair.

From mile 1 to 56, from the commencement of work in 1904 to March, 1906, under the charge of Mr. G. W. Eves, Assoc. M. Inst. C.E. Clear being appointed on the latter's retirement to take up an appointment on the Canton-Kowloon Railway.

From mile 56 to 144, Mr. F. Grove, M. Inst. C.E., was in charge as executive engineer until May, 1907, when he was appointed engineer-in-chief of the Imperial Chinese Section of the Canton-Kowloon Railway; Mr. B. T. B. Boothby, Assoc. M. Inst. C.E., being promoted executive engineer until the 16th January of the present year, when he left the service to join Mr. Grove's staff.

From mile 144 to Nanking, including the tunnel, the executive engineer was Mr. J. G. Brakley, M. Inst. C.E.

Work was generally let by petty contract at schedule rates, day work being as far as possible avoided.

All rolling stock was erected at the Woosung Shops under the supervision of Mr. E. J. Dunstan, M. I. Mech. E., the electrical installations by Mr. W. J. Grey, electrical engineer.

The accounts department was under the supervision of Mr. E. R. Morriss, chief accountant and Mr. H. Middleton, deputy accountant.

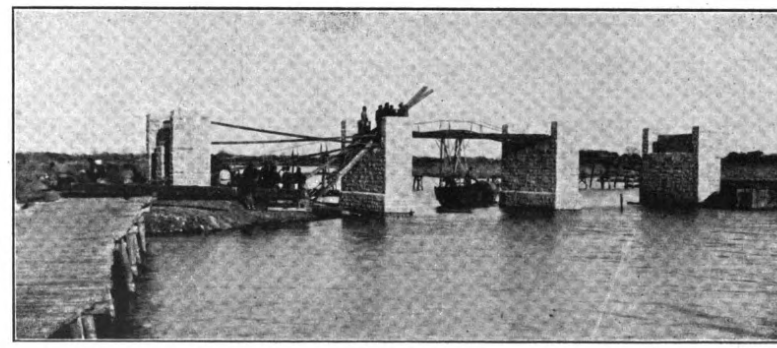
Until the arrival of Mr. A. W. U. Pope, the present traffic manager, the traffic department from 1905 until the end of 1906 was under the charge of Mr. H. P. Winslow, the present deputy traffic manager.

The stores department, from the commencement of the work until December last, was under the late Mr. C. F. Moule.

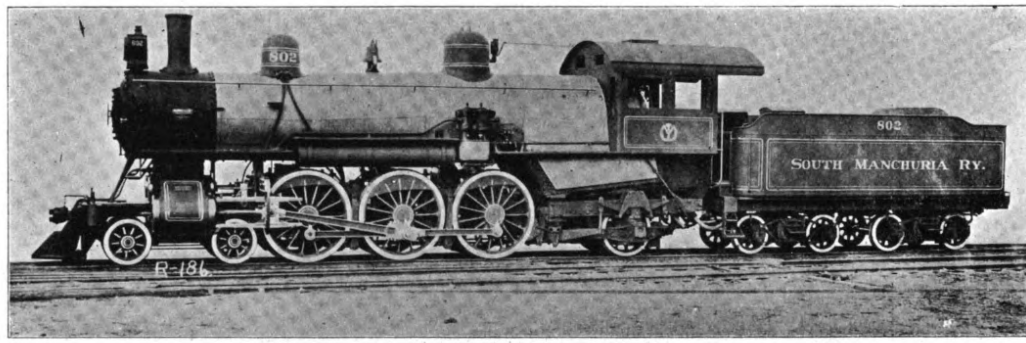
The author has to record with deep regret the following deaths which occurred among the staff during the construction work:

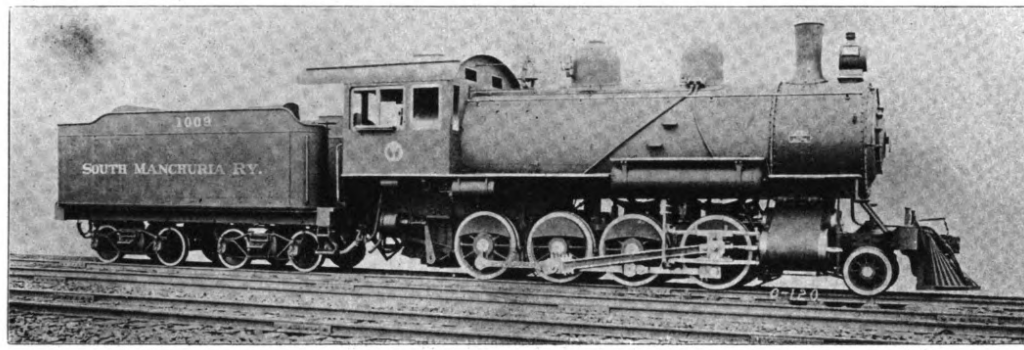
Messrs. R. Wells and W. L. Allan, assistant engineers, Mr. H. J. Easterbrook, assistant accountant, Mr. A. C. Walker, chief draughtsman, and Mr. C. F. Moule, chief storekeeper.

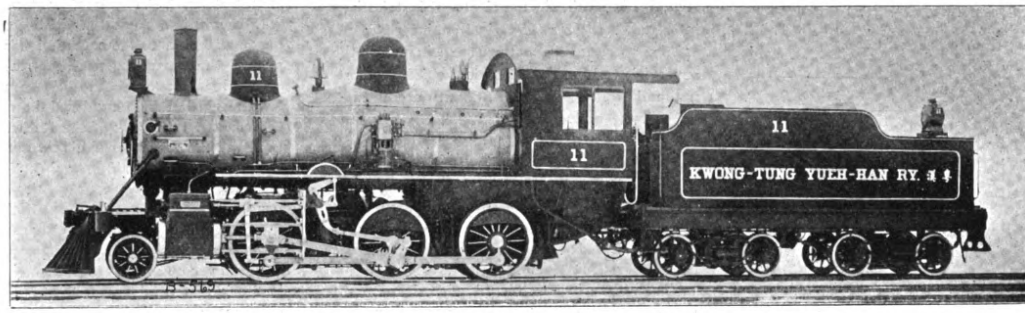
In conclusion, the author wishes to record his personal thanks to the commissioners, the joint agents, the consulting engineers, and members of all departments, both Chinese and foreign, for the cordial help rendered in carrying out the construction work of the Railway, and also to thank the members of his own staff, particularly Mr. C. G. Golding, Mr. J. S. Lee, chief draughtsman, Mr. W. N. Chow, the chief Chinese draughtsman, and the Chinese staff of the drawing office for the assistance they have given him in preparing this paper, and the diagrams in connection therewith. The author is also indebted to Mr. H. Middleton, the acting chief accountant, for the help given in connection with the figures contained in the summary quoted in the paper.

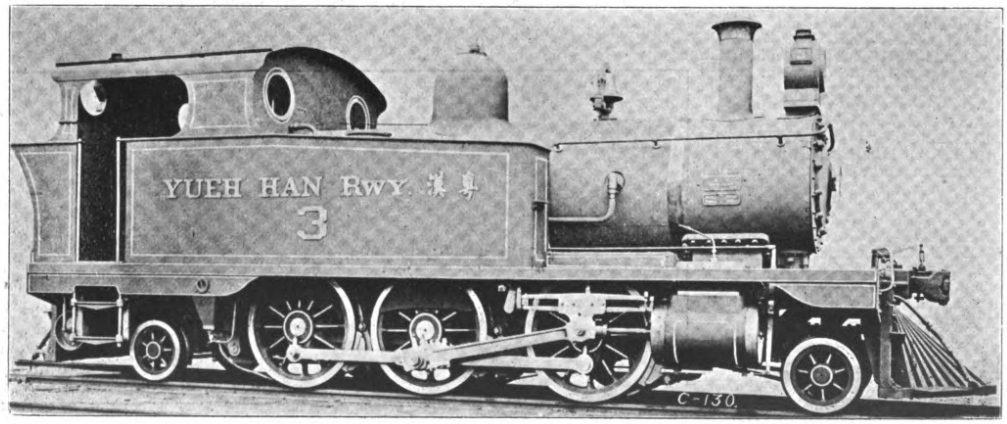


BRIDGING THE GRAND CANAL ON THE SHANGHAI-NANKING RAILWAY









TYPES OF AMERICAN LOCOMOTIVE COMPANY, IN OPERATION ON CHINESE RAILWAYS

NANKING CITY RAILWAY

From Terminus of Shanghai-Nanking Railway on the Yangtsze, to Nanking City

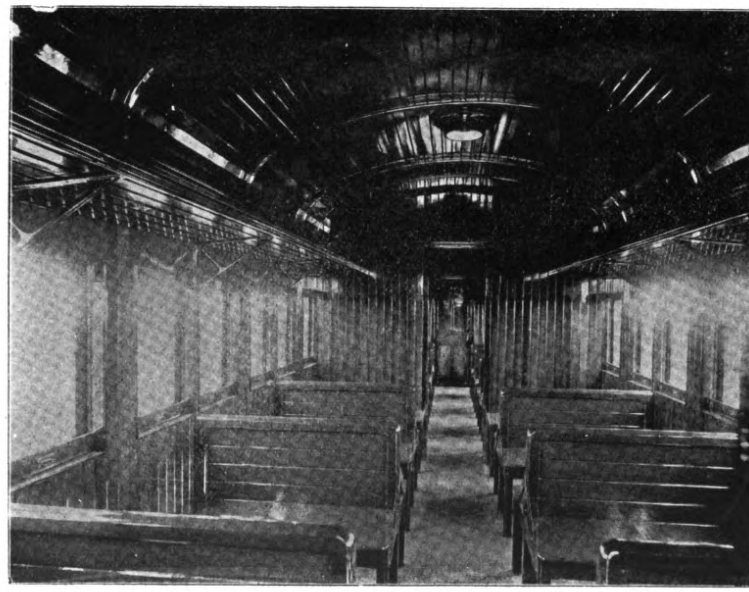
This line is a Chinese provincial government concern and is known as the Viceroy's railway from the fact that Viceroy Tuan Fang of the Liang Kiang Provinces built it out of the provincial funds. A section of it, extending from the Drum Tower in the city to the terminus of the Shanghai-Nanking Railway at Hsia Kuan, was opened to traffic on Aug. 26th 1908, and the line was subsequently completed up the Chung Cheng Chieh beyond the Viceroy's Yamen. It has recently been extended over the creek at Hsia Kuan down to within a few yards of the south bank of the Yangtsze where a fine terminal station is being erected its total length being about 7½ miles. The line has been well constructed by a British engineer, Mr. Leeme, and is well managed and may be regarded as an eminently successful undertaking. Its earnings on account of passenger traffic are considerable. The total cost of the line was about Taels 300,000.

The future prospects of the line while it remains at its present length will depend in the main on the conveyance of passengers. It is true that the difficulty of transport between the business quarter, which is in the southern part of the city, and the river 7 miles away, is obviated by the line and that an expansion of trade might therefore be looked for but it is probable that such expansion would be more likely to result from an extension of the line beyond the city in the south-eastern districts, which produce the chief articles of export, such as silk and various agricultural products. The road is of standard gauge; passenger locomotives being employed to haul a train of six coaches. There are two American locomotives from the Brooks Locomotive Works at Dunkirk, N. Y., U. S. A. The passenger cars were purchased from the Shanghai-Nanking Railway, and were formerly in use on the old Woosung line. They were put together at the Woosung shops of the S. N. Railway. They are fitted with Janney couplers and Westinghouse Air Brakes, with Laycock seats and fittings.

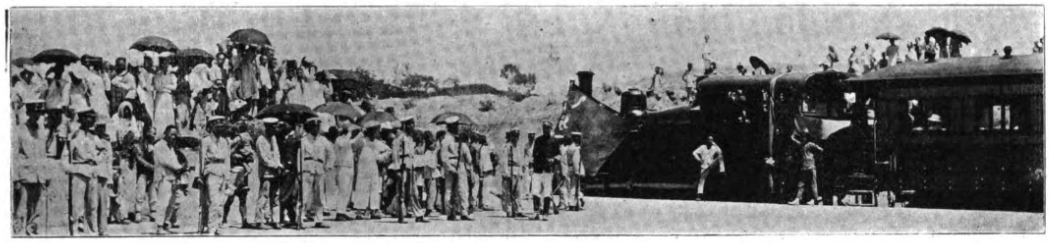
First, second, and third class passenger coaches are in use; and the fares for the whole distance are 60, 30 and 15 cents, Mexican, or approximately 30, 15 and 7½ cents gold; with proportionate reductions for intermediate distances.

As an evidence of changed conditions in China the two thousand ricksha and carriage coolies, although partially deprived of a means of livelihood, peaceably accept the improved conditions although the local authorities apprehended some hostile demonstration on the opening of the road.

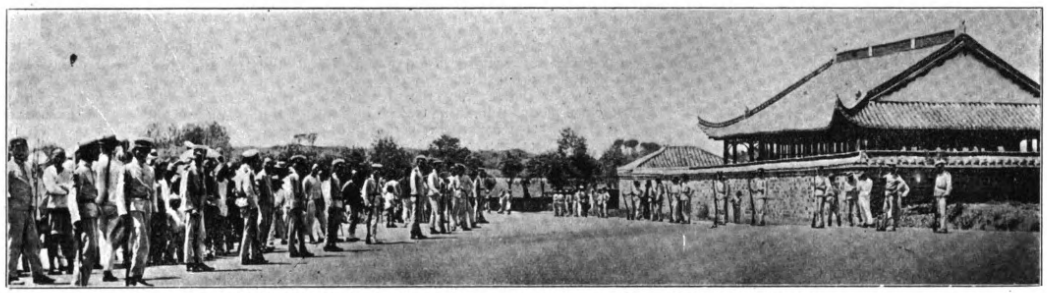
NANKING CITY RAILWAY.—AMERICAN (BROOKS) LOCOMOTIVE



INTERIOR VIEW OF COACH

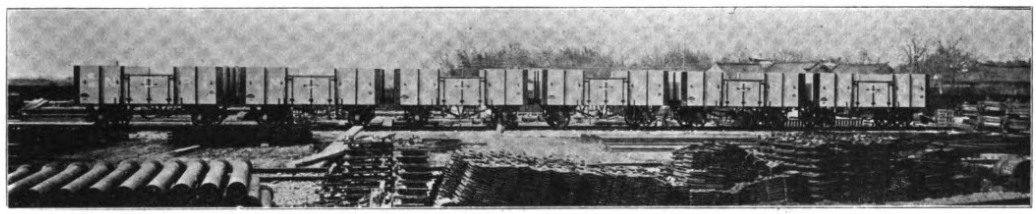


NANKING CITY RAILWAY.—TRAIN AND STATION ON OPENING DAY

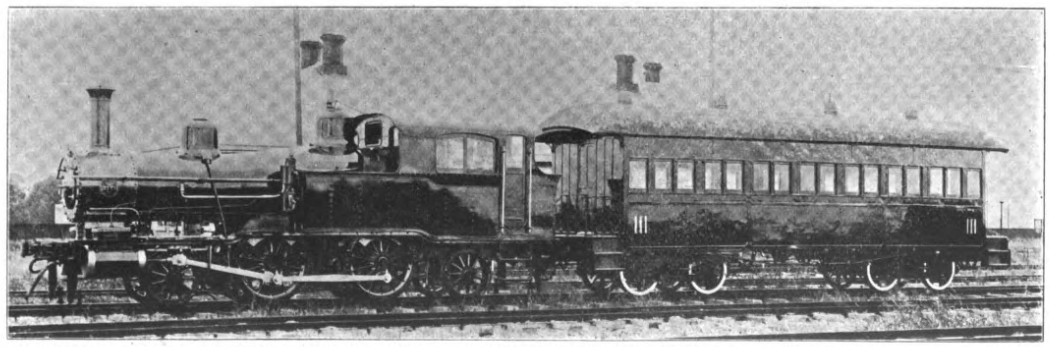


NANKING CITY RAILWAY.—MAIN STATION AND OFFICE AT NANKING

NANKING CITY RAILWAY.—OPENING IN THE CITY WALL FOR THE RAILWAY



NANKING CITY RAILWAY.—TYPE OF HIGH SIDE GOODS WAGONS



NANKING CITY RAILWAY.—AMERICAN BROOKS LOCOMOTIVE AND 3RD CLASS CAR BUILT AT THE WOOSUNG WORKS OF THE SHANGHAI-NANKING RAILWAY

THE TSITSIHAR LIGHT RAILWAY

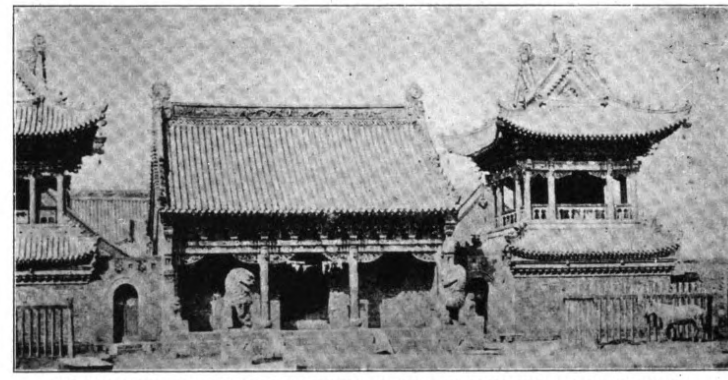
When the Russians constructed the Chinese Eastern Railway through Northern Manchuria, true to their custom, they purposely ran their line several miles from the cities or towns, with the idea of attracting the trade and commerce into the railway zone over which they claimed administrative control.

Tsitsihar, the provincial capital of Heilungkiang Province and the seat of the Governor, is a highly prosperous and important mart, but the Russians regardless of the benefits which might accrue to their line, by coming within a reasonable distance of the town left it 18 miles to the North. Communications between the New Tsitsihar to the old capital was difficult in summer time over the deep muddy roads, and in winter, the bitter northern blizzards were the cause of many deaths by freezing for the unprepared traveller in the 18 mile stretch. In addition, the active Hunghutze bandits did a thriving business holding up and looting travellers over the road. So if the Russian Railway would not come to Tsitsihar, the Chinese would build one for their own convenience, and accordingly the Governor of Heilungkiang entered into a contract with the firm of Telge & Schroeter of Tientsin to construct the road and supply the materials. The road was opened for traffic in August last It is about 18 miles long, of meter gauge, with 30 lb. rails. There are three stations, with appropriate sheds and shops for such a small road.

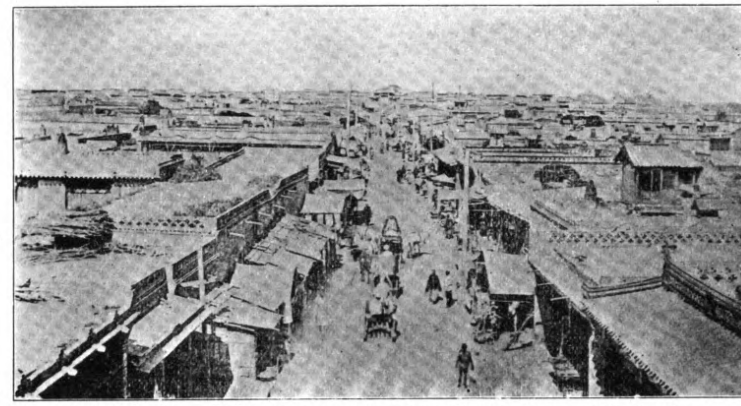
The locomotives are 10 ton engines, 9″ cylinder 12″ stroke, and are rather powerful for their size, being capable of hauling a 100 tons load at a speed of about 17 miles per hour.

The rolling stock consists of freight cars of 6 tons capacity, and of 1st, 2nd, and 3rd class passenger cars. For the personal convenience of the Governor and other high officials an elegantly fitted up saloon car has been provided, a photo of which is attached herewith.

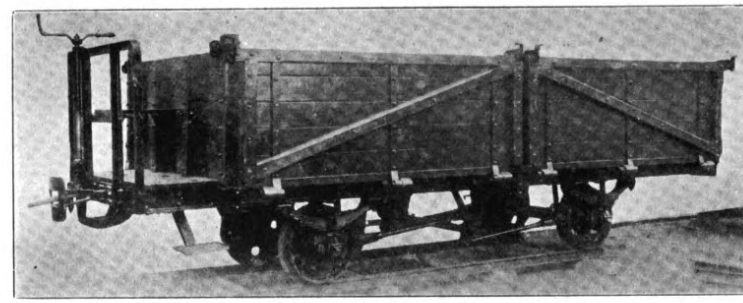
All rails, locomotives and rolling stock have been manufactured by Messrs. Orenstein & Koppel of Berlin, while Messrs. Telge & Schroeter of Tientsin have been the contractors. Mr. W. R. T. Tucky was the engineer in charge.



TSITSIHAR.—THE YAMEN OF THE GOVERNOR OF HEILUNGKIANG PROVINCE

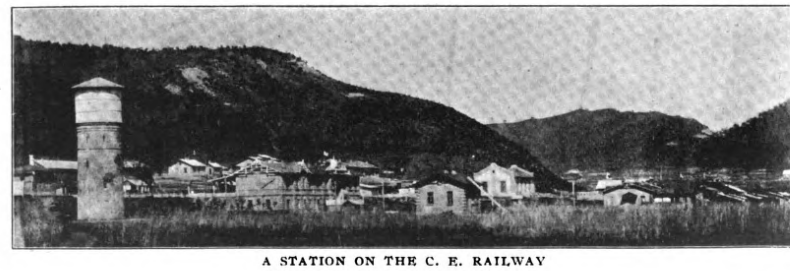


TSITSIHAR.—THE CAPITAL OF HEILUNGKIANG PROVINCE. MAIN STREET

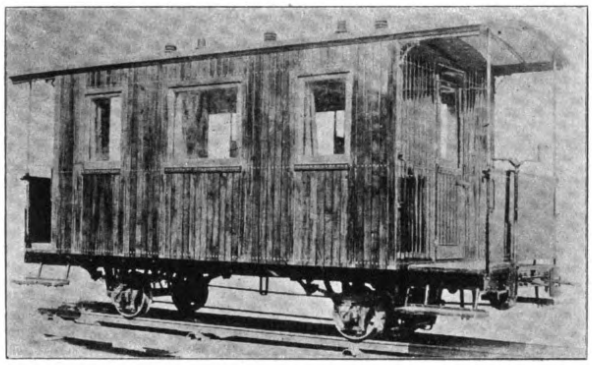


TSITSIHAR LIGHT RAILWAY.—6 TON FREIGHT CAR

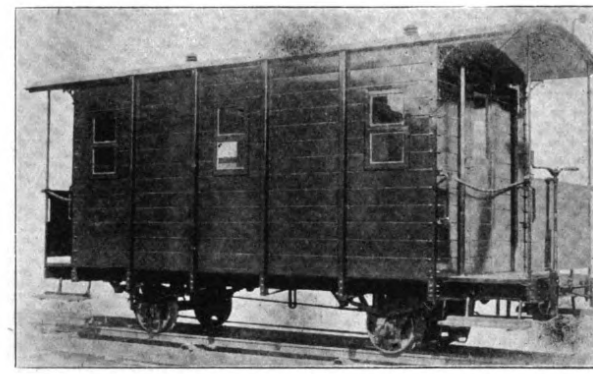
HIS EXCELLENCY CHOU SHU-MU,
GOVERNOR OF HEILUNGKIANG PROVINCE
(TSITSIHAR)



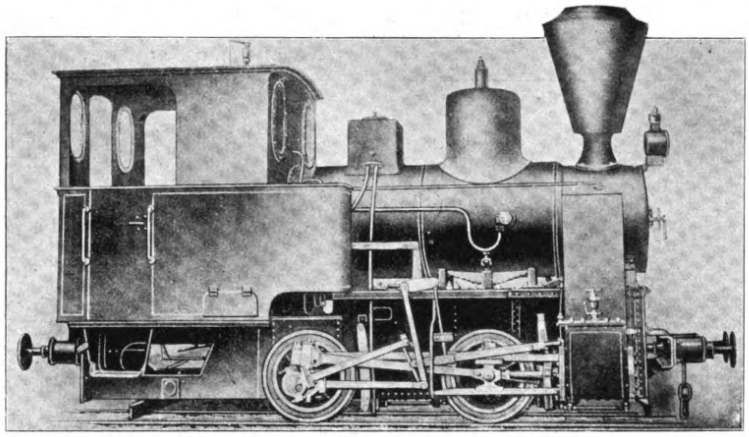
A STATION ON THE C. E. RAILWAY



TSITSIHAR LIGHT RAILWAY.—2ND CLASS PASSENGER CAR



TSITSIHAR LIGHT RAILWAY.—3RD CLASS PASSENGER CAR



TSITSIHAR LIGHT RAILWAY.—ORENSTEIN & KOPPEL LOCOMOTIVE

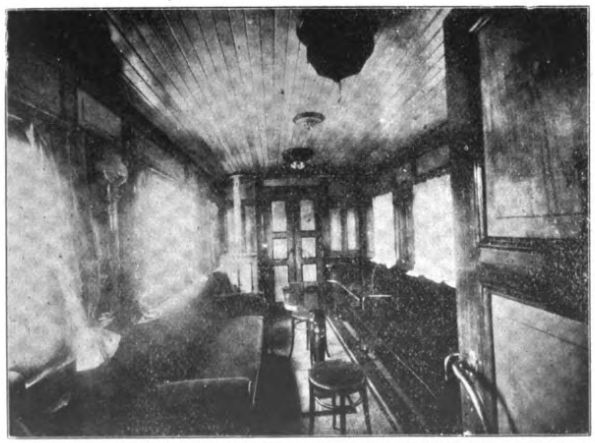
TSITSIHAR-AIGUN RAILWAY

The construction of a road connecting Tsitsihar, the capital of Heilungkiang Province, with the town of Aigun on the Amur River has been advocated from time to time by the Chinese authorities as a military necessity. The Peking Agreement of 1905 which gave to Japan certain preferential railway rights in Manchuria and prohibited China from building a line parallel to, or in the vicinity of the South Manchuria road, made it impossible for China to reach her northern frontiers except by a line through Mongolia.

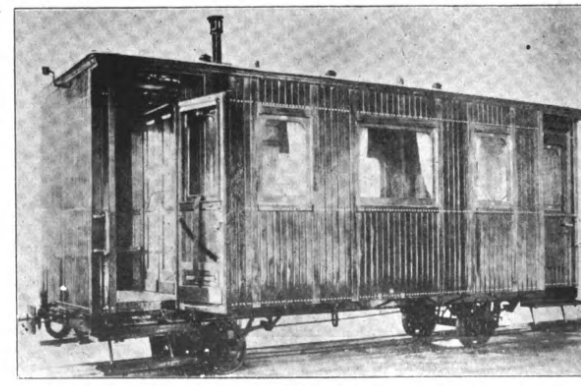
By granting a contract to a British firm for the extension of the Imperial Railways of North China towards Fakumen, China hoped to circumvent the letter of her agreement with Japan, and if this initial step met with no opposition, the road was afterwards to be extended still further northwards, ultimately reaching the provincial capital of Heilungkiang Province at Tsitsihar. A road from this point northwards to Aigun on the Amur River has already been partially surveyed and reported on and in 1907 the Governor of Heilungkiang is reported to have entered into an agreement for its construction, but owing to lack of funds, the only part of the work actually let out to contract was the short 18 mile line from Old Tsitsihar to the main line of the Chinese Eastern Railway. This line has recently been opened to traffic. The proposed railway northwards towards Aigun will be about 245 miles in length. From Tsitsihar it will proceed in a northerly direction and skirt the banks of the Nonni river for a distance of about 100 miles, as far as the important town of Mergen. From Mergen it will branch off to the north east to Aigun via Mono-khe a market town of note. The Governor of Heilungkiang promised to complete the line within four years and despatched a number of officials to commence operations and attend to the survey work.

The line, although confined to the fairly level stretches of the Nonni Valley, will not be without several engineering difficulties. About 25 tunnels of various lengths have to be pierced Between Mergen and Aigun the line will run alongside the existing Chinese highway.

The Tsitsihar Aigun line is expected to prove of great commercial utility. It will bring Southern Heilungkiang and also Kirin province in direct communication with Blagovostchensk on the Amur and other important Russian towns situated on this river. It will increase commercial activity and serve as a connecting link between the Chinese Eastern railway line and the Amur river steamship lines.



TSITSIHAR LIGHT RAILWAY.—SALOON CAR FOR THE GOVERNOR OF HEILUNGKIANG



TSITSIHAR LIGHT RAILWAY.—EXTERIOR OF SALOON CAR

THE SHANTUNG RAILWAY

The lease of Kiaochow by Germany in 1898 for 99 years was the outcome of the murder of two German missionaries in the province of Shantung in 1897. The commander of the German squadron took possession and a demand made on the Peking government for the punishment of the governor of Shantung, an indemnity to the families of the victims and an amount to reimburse Germany for the cost of occupation, besides securing a preference for Germon railway enterprise in that province. These demands were practically acceded to and with the signing of the lease a railway convention was concluded which follows:

I.—The Chinese Government sanctions the construction by Germany of two lines of railway in Shantung. The first will run from Kiaochow and Tsinan-fu to the boundary of Shantung province, *via* Wei-hsien, Tsinchow, Pashan, Tsechuen and Suiping. The second line will connect Kiaochow with Chinchow, whence an extension will be constructed to Tsinan through Laiwuhsien. The construction of this extension shall not be begun until the first part of the line, the main line, is completed, in order to give the Chinese an opportunity of connecting this line in the most advantageous manner with their own railway system. What places the line from Tsinan-fu to the provincial boundary shall take in *en route* is to be determined hereafter.

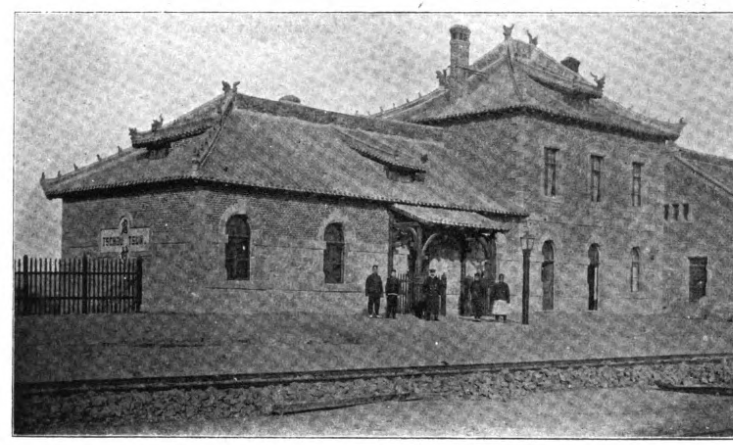
II.—In order to carry out the above mentioned railway work a Chino-German Company shall be formed, with branches at whatever places may be necessary, and in this Company both German and Chinese subjects shall be at liberty to invest money if they so choose, and appoint directors for the management of the undertaking.

III.—All arrangements in connection with the works specified shall be determined by a future conference of German and Chinese representatives. The Chinese Government shall afford every facility and protection and extend every welcome to representatives of the German Railway Company operating in Chinese territory. Profits derived from the working of these railways shall be justly divided *pro rata* between the shareholders without regard to nationality. The object of constructing these lines is solely the development of commerce. In inaugurating a railway system in Shantung Germany entertains no treacherous intention towards China, and undertakes not to unlawfully seize any land in the province.

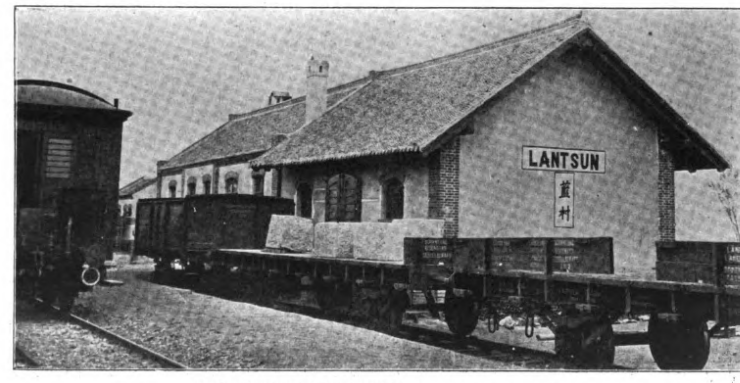
IV.—The Chinese Government shall allow German subjects to hold and develop mining property for a distance of 30 li from each side of these railways and along the whole extent of the lines. The following places where mining operations may be carried on are particularly specified along the northern railway from Kiaochow to Tsinan, Weihsien, Pa-shan-hsien and various other points; and along the Southern Kiaochow-Tsinan-Chinchow line, Chinchow-fu, Luiwuhsien, etc Chinese capital may be invested in these operations and arrangements for carrying on the work shall hereafter be made by a joint conference of Chinese and German representatives. All German subjects engaged in such works in Chinese territory shall be properly protected and welcomed by the Chinese authorities and all profits derived shall be fairly divided between Chinese and German shareholders according to the extent of the interest they hold in the undertakings. In trying to develop mining property in China, Germany is actuated by no treacherous motives against this country, but seeks alone to increase commerce and improve the relations between the two countries.

If at any time the Chinese should form schemes for the development of Shantung, for the execution of which it is necessary to obtain foreign capital, the Chinese Government, or whatever Chinese may be interested in such schemes, shall, in the first instance, apply to German capitalists. Application shall also be made to German manufacturers for the necessary machinery and materials before the manufacturers of any other Power are

SHANTUNG RAILWAY —TERMINAL AT TSINGTAO



SHANTUNG RAILWAY.—TSCHOU-TSUN STATION

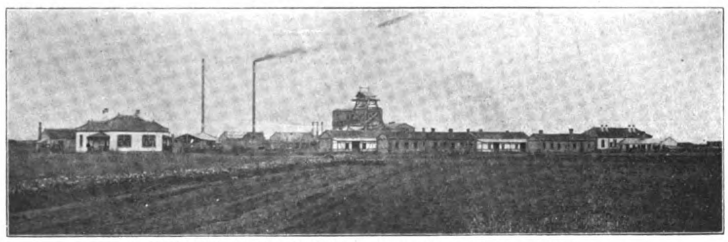


SHANTUNG RAILWAY.—LANTSUN STATION

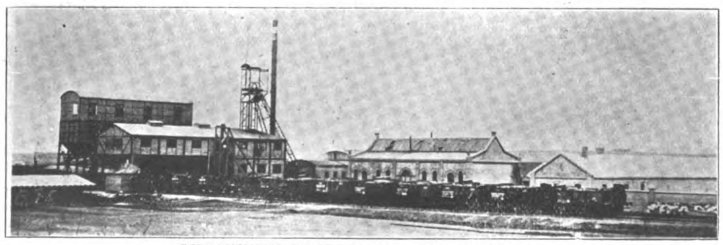
SHANTUNG RAILWAY.—CHING-CHOW FU STATION

SHANTUNG RAILWAY.—TSCHENG-YANG STATION

SHANTUNG RAILWAY.—LIKOTSCHUANG STATION



SHANTUNG RAILWAY.—COAL MINE AT FANG-TSE



SHANTUNG RAILWAY.—FANG-TSE MINES

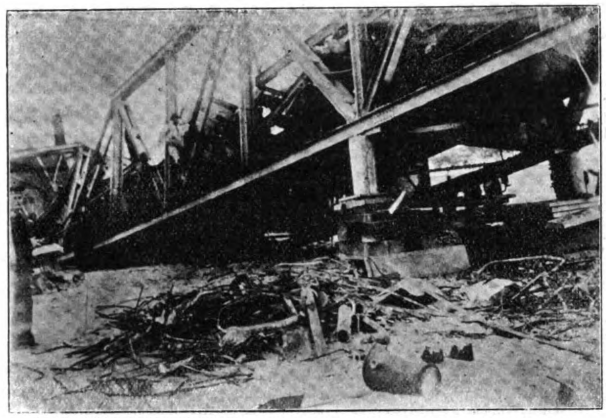
approached. Should German capitalists or manufacturers decline to take up the business the Chinese shall then be at liberty to obtain money and materials from sources of other nationality than German.

Then followed the development by the German government of the port of Kiaochow for which 8,500,000 marks were appropriated by the Reichstag. A company to be known as the Schantung Eisenbahn Gesellschaft was organized at Berlin with a capital of 54,000,000 marks. By its concession the Syndicate was to build a line from Tsingtau to Kiaochow and from the latter point by way of Weihsien to Chinanfu together with a branch to Poshan, within a period of five years. In addition the Syndicate was given an option to construct a line from Kiaochow to Ichowfu and another connecting Chinanfu and Ichowfu. In consideration of this concession the Syndicate agreed to turn over to the German government a part of the surplus profits after paying a dividend of 5%. The construction of the main line was completed in 1904, a distance in all of 240 miles. The branch to Poshun is 34 miles in length, making, in all, 274 miles approximately. The proposed line between Ichowfu and Chinanfu was abandoned in favor of the Anglo-German Syndicate in connection with the construction of the Tientsin-Pukow line. The Kiaochow-Ichowfu line was surveyed but further work was abandoned. The cost of the line was approximately $47,500 gold a mile. The editor of the *London and China Express* who visited Shantung in 1907 makes the following interesting report:

"The Schantung Eisenbahn Gesellschaft runs between Tsingtau and Tsinan-fu, the capital of the province, and it has a branch line to Poshan for the mines there. The main line is 412 kilometers long. It is standard gauge and laid on iron sleepers. Moderate weight rails are employed, and at present no fast speeds are attempted. The journey in fact takes 13 hours, of which nearly three hours were stoppages. Some acceleration of the service is to take place this autumn. Certainly what seemed to strike one at present was the unnecessarily long halts that occurred at some of the stations, and again the large number of stations. Other railways in China have greater distances as a rule between the stopping places, and one wondered whether all the stations could pay. A reference to the last issued report showed, however, that each was contributing a net revenue, so that their comparative frequency is justified. The stations are good, useful buildings, without ostentation, and adapted to the purposes for which they are designed. The bridge work over the many shallow rivers and streams, which in the rainy season often become raging torrents for a short time, is fairly solid, and the roadbed in good order, certainly for the speeds at which we progressed. According to the last available figures, those for 1906, the stock comprised 30 locomotives, 107 passenger and baggage wagons, including three postal cars, and 720 freight cars. The latter include some fine covered vans for the transport of strawbraid, specially constructed so as to take 15 tons of measurement braid."

The Shantung Railway Company reported that in 1905 the traffic showed a sufficient development, while in 1904 there was an average weekly traffic of 10,748 passengers and 4,695 tons of goods, for 1905 there were 15,452 passengers and 5,971 tons of goods. In 1905 the total traffic amounted to 803,527 passengers (558,868 in 1904) and to 310,482 tons (179,270). Among the goods coal takes the first place with 158,115 tons in 1905 and 68,921 tons in 1904. Also it may be mentioned that of agricultural produce from the interior, and as beans, oil, cotton, earthenware, straw plaitings, etc., continually larger quantities are transported. The financial result showed an income of 1,912,296 Mex. dollars, against 1,246,047 Mex. dollars for 1904. After writing off m.50,000 on stocks, and after giving m.300,000 to renewal purposes there remained a net profit of m.2,063,572, out of which m.103,179 were applied to special reserve, while m.1,755,000 was distributed as a dividend of 3¼ per cent on the paid-up share capital of m.54,000,000.

In 1906 there were carried 846,000 passengers, against a little over 800,000 in 1905, and 381,000 tons of goods, against 310,000 tons the year



SHANTUNG RAILWAY.—ACCIDENT AND COLLAPSE OF BRIDGE

SHANTUNG RAILWAY.—TSINGTAU TRAIN YARD

before. The coal transported was 208,000 tons. The distribution of petroleum amounted to 10,000 tons a year. The passengers travelled on an average 70 kilometers in 1906, against 68 in 1905, and the goods haulage was 179 kilometres, being the same as for 1905. The receipts in 1906 were $2,169,000, against $1,912,000 in 1905. This meant $4,970 per kilometre, against $4,382 in 1905. The expenses per kilometre in 1906 were $2,089. The passenger fares, generally speaking, are moderate in amount. The surplus, aided by a higher exchange, came to m.2,642,000, and after passing 5 per cent. to reserve and 5 per cent. to special reserve a dividend of 4¼ per cent. was paid on the capital of m.54,000,000. The staff in Shantung comprises 57 Europeans and 424 Chinese. The company has a complete range of workshops at Sypang close to Tsingtau, where all repairs to stock and other material can be carried out, as well as construction work up to a certain point. The company houses its employees here, and the workmen's dwellings are a model of what should be done for Chinese in this way."

The longitudinal section of the road shows that the main line is made up of forty-two per cent. level, twenty-nine per cent. rise, and twenty-nine per cent. fall, with a maximum grade of six per cent. The permanent way has been constructed to sustain ordinary traffic at a speed not exceeding 37.5 miles per hour.

The survey covered an area of a strip of land varying in breadth between 500 and 2,000 yards, and cost about £36 per mile, being completed at the rate of ten miles per month. The land was expropriated in accordance with Chinese law, 1*s.* 1*d.* being paid per square yard, with a surcharge of eight per cent. for land in crop and near the townships. The earthwork was sub-let in contracts of six miles in length, and was paid for at schedule prices, 1*s.* 4*d.* per cubic yard for ordinary earthwork, and 10*d.* per cubic yard for rock. All bridges and culverts were standardized, as well as the wooden and steel scaffoldings used for erection.

The railway was five years in construction and cost:—

	£
Land	89,700
Earthwork	148,000
Level crossings and fencings	2,700
Bridges and culverts	728,000
Permanent way	759,000
Signals, blockhouses, etc.	13,200
Stations	106,000
Repairing-shops, etc	85,000
Materials (coals, etc.)	310,000
Administrative expenses	203,000
Interest on capital, etc	200,000
Total	£2,644,600

or, including interest on capital, about £9,200 per mile.

The Report of the Company for 1908 shows the following returns:—

The receipts increased from Mex. $2,355,696 (U. S. $958,768) in 1907 to Mex. $2,599,940 (U. S. $1,058,176) i.e. 10.37%, while the expenditure decreased from Mex. $822,703 (U. S. $331,657) in 1907 to Mex. $799,652 (U. S. $325,458). The profits increased from Mex. $1,532,993 in 1907 to $1,800,287 i.e. 17.44% (U. S. $623,928 and $732,717).

The average exchange for Mex. $100 equal Mk. 213.78 (U. S. $50.88) decreased to Mk. 178.07 in 1908 (U. S. $42.38), that is 16.8%; so in remitting the money to Germany there was a loss in exchange of Mk. 642,883 (U. S. $153,004), so that the profit in Marks does not reach last year's total. A dividend of 4¾% was declared.

November 23, 1908, a mixed train was derailed on the Peishaho bridge through breaking of an axle, in consequence of which 8 persons were severely injured; a bridge culvert was destroyed and four cars were burned. The incurred expenditure amount to Mk. 110,000 (U. S. $26,180). All relations between Chinese and Officials were satisfactory.

The establishment of buildings along the road at places without hotel accommodations proved to be needed, and is greatly appreciated by inland travellers. Six new buildings for employees were built along the road.

Afforestations on both sides of the road has been commenced. Acacias and elders have been principally used.

The rolling stock has been increased by 2 locomotives, 6 baggage cars, 10 covered freight cars, 20 coal cars and 3 tank cars; through the accident at the Peishaho bridge four cars were lost.

The rolling stock all told at the end of the year consisted of: 35 locomotives, (17 double engines, 4 tender engines, 7 freight engines, 4 reserve engines) in all 0.0733 piece per kilometer. 109 passenger and baggage cars: (19 passenger cars I-II class, 17 cars II class, 59 cars III class, amongst the latter are 24 for small freight, and two dining cars. Twelve baggage cars, 7 mail cars, 1 service car and 1 parlor car) in all 0.250 pieces per kilometer. 793 freight and service cars (180 covered cars, 460 coal cars, 25 coke cars, 5 double bottom cattle cars, 10 lime cars, 100 platform cars, 8 tank cars, 3 crane cars, 2 tool cars. In all 1.817 pieces per kilometer. The locomotives are all of German type weighing from 33 to 100 tons. The weight of freight cars empty is from 7 to 20 tons, loaded from 22 to 35 tons.

There run 14 mixed trains daily and extra freight trains if necessary. Besides, since September 15, one fast train has been run daily, in each direction between Tsingtao and Tsinanfu-West, stopping at the main station only.

The principal articles of freight in carloads were: Hard coal, brickets and coke 258,978 tons, beans 37,745 tons, assorted goods 30,835 tons, metals, metal goods, machinery, etc., 18,286 tons, wood and wooden articles 17,793 tons, kerosene 17,784 tons, salt 13,629 tons, cotton, raw and spun 10,346¼ tons, grain 8,241 tons, fruit and nuts 7,714 tons, paper 6,328 tons, sorghum 6,177 tons, sugar 6,125 tons, crockery ware 5,155 tons, strawbraid and rush matting 4,919 tons, oil 3,784 tons, lime 2,534 tons, matches, 2,525 tons, brooms 2,195 tons, vegetables and trees 2,073 tons, rice 1,598 tons, stones 1,295 tons, cement 1120 tons and tar 1,050 tons.

Less than 1,000 tons and above 100 tons were transported: Indigo, glass, cocoons, cash, oil cake, tobacco, soda, silk, straw, bones, flowers and plants, fish, skins and pelts.

Animals were transported:

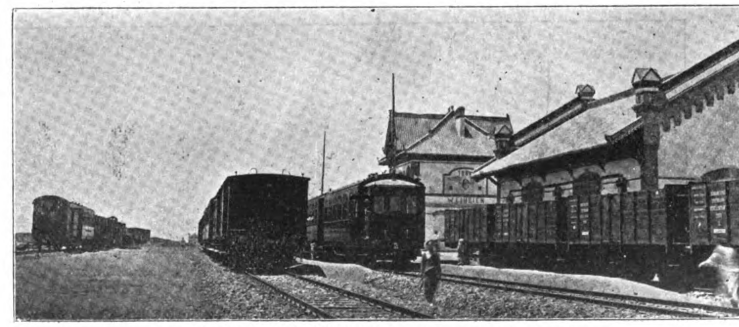
19,428 head of large animals against 26,214 in 1907.

20,136 head of small animals against 7,595 in 1907.

Of the larger animals there were:

13,367 head oxen, 5,001 donkeys, 670 mules, 390 horses; and of the small animals: pigs 18,650, sheep 954, calves 532.

The financial results show total receipts of Mex. $2,614,078.58 against $2,359,185.42 (U. S. $1,064,929.98) $960,188.46 an increase of 10.80% against the previous year.



SHANTUNG RAILWAY.—WEIHSIEN STATION

THE SOUTH MANCHURIA RAILWAY

The South Manchuria Railway between Kuangchengtzu, Dalny, and Port Arthur was transferred to the Japanese Government by Russia at the close of the Russo-Japanese War. The organization of a company to operate this line was authorized by an Imperial Ordinance issued by the Emperor of Japan, and in pursuance of the provisions thereof the Organization Committee held its first meeting on the 10th of August, 1906.

It was decided that the head offices of the Company should be located at Tokyo, with a branch office at Dalny, that the Company should be capitalized at Yen 200,000,000, the Government to receive Yen 100,000,000 in shares for

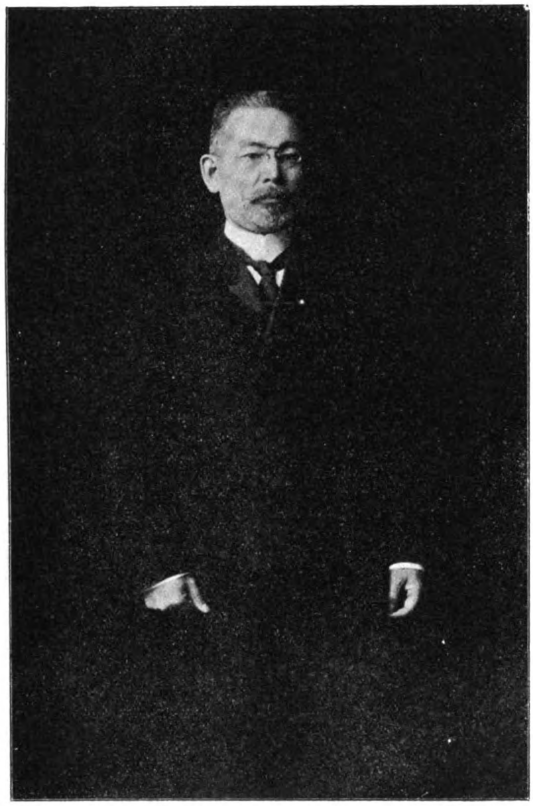
(1) Railways already constructed (excluding the rolling stock now in use, rails of the Mukden Antung-hsien light railway and accessories).

(2) All property accessory to the above railways (excluding the property in the Leased Territory which should be specially designated by the Government).

(3) Coal mines at Fushun and Yentai.

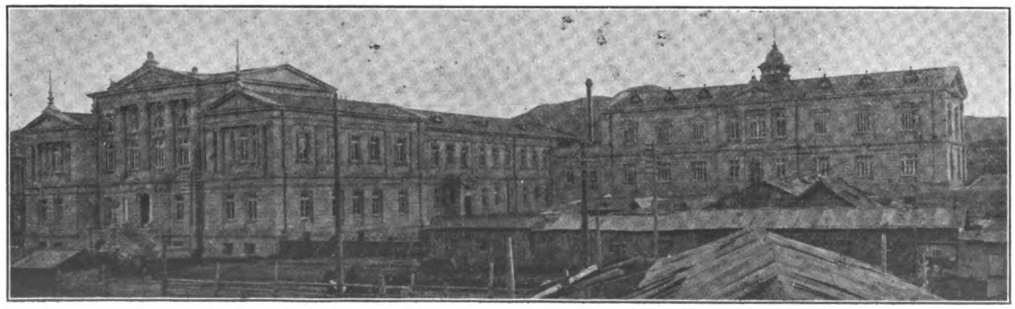
It was also provided that interest, guaranteed by the Government, is to be paid at the rate of 6% per annum on the paid up capital of the Company for fifteen years after the registration of its organization and that the subsidy shall in no case exceed 6% of the paid up capital, that the subsidy with an interest of 6% shall be made a liability of the Company to the Government, repayable with the excess of the Company's dividends above 10% per annum on all shares.

There were, when subscriptions were called for in the autumn of 1906, 11,467 applicants for 106,643,418 shares. Of these all applications for less than ten shares were rejected, leaving 11,356 applicants for 106,643,016 shares or 106,544,016 shares in excess of the 99,000



HIS EXCELLENCY BARON S. GOTO
MINISTER OF COMMUNICATIONS OF THE IMPERIAL JAPANESE GOVERNMENT. AS FIRST PRESIDENT OF THE SOUTH MANCHURIA RAILWAY COMPANY, HE REBUILT AND REORGANIZED THE ROAD, BRINGING IT UP TO ITS PRESENT HIGH STATE OF EFFICIENCY

MR. Z. NAKAMURA,
PRESIDENT OF THE SOUTH MANCHURIA RAILWAY COMPANY



SOUTH MANCHURIA RAILWAY.—GENERAL OFFICES AND ADMINISTRATION BUILDING AT DALNY, RECENTLY COMPLETED

to be allotted, the apportionment being as follows:—

	Shares.
Apportioned by calculation	94,333
Apportioned by lot	4,667
Directors' shares, reserved	1,000
Total	100,000

The Government's portion, Yen 100,000,000, was regarded as paid up, and the actual subscribed capital of the company is now Yen 120,000,000.

Although it was provided that the South Manchuria Railway should be a Chinese-Japanese organization, the Chinese failed to avail themselves of the opportunity to purchase shares and protested against the organization of the Railway on the grounds that the Articles of Association were inconsistent with the terms of the Peking Treaty signed in December 1905, and claimed that Japan had included in the list of "property" of the South Manchuria Railway Company certain branch lines and collieries, notably the Yentai and Fushun Mines, which they claimed, although a certain amount of Russian capital was used in their operation, were Chinese private property.

Administration.—In view of the varied functions delegated to the Railway Administration as well as the intimate association of this organization with the Japanese Government, the political significance of its policy, and the extent to which its control of the communications of southern Manchuria may affect the commercial development of this region, can scarcely be overestimated.

The Railway Company is empowered to:—

(1) Engage in the following business for the benefit of the Railway:

(a) Mining, especially the working of the Yentai and Fushun collieries.

(b) Marine transport.

(c) Electric works.

(d) Sale on consignment of the principal goods carried by rail.

(e) Warehousing business.

(f) Construction and administration of land and houses on the land belonging to the railway.

(2) Make the necessary provisions for education, health, and engineering work within the limit of the land belonging to the railway.

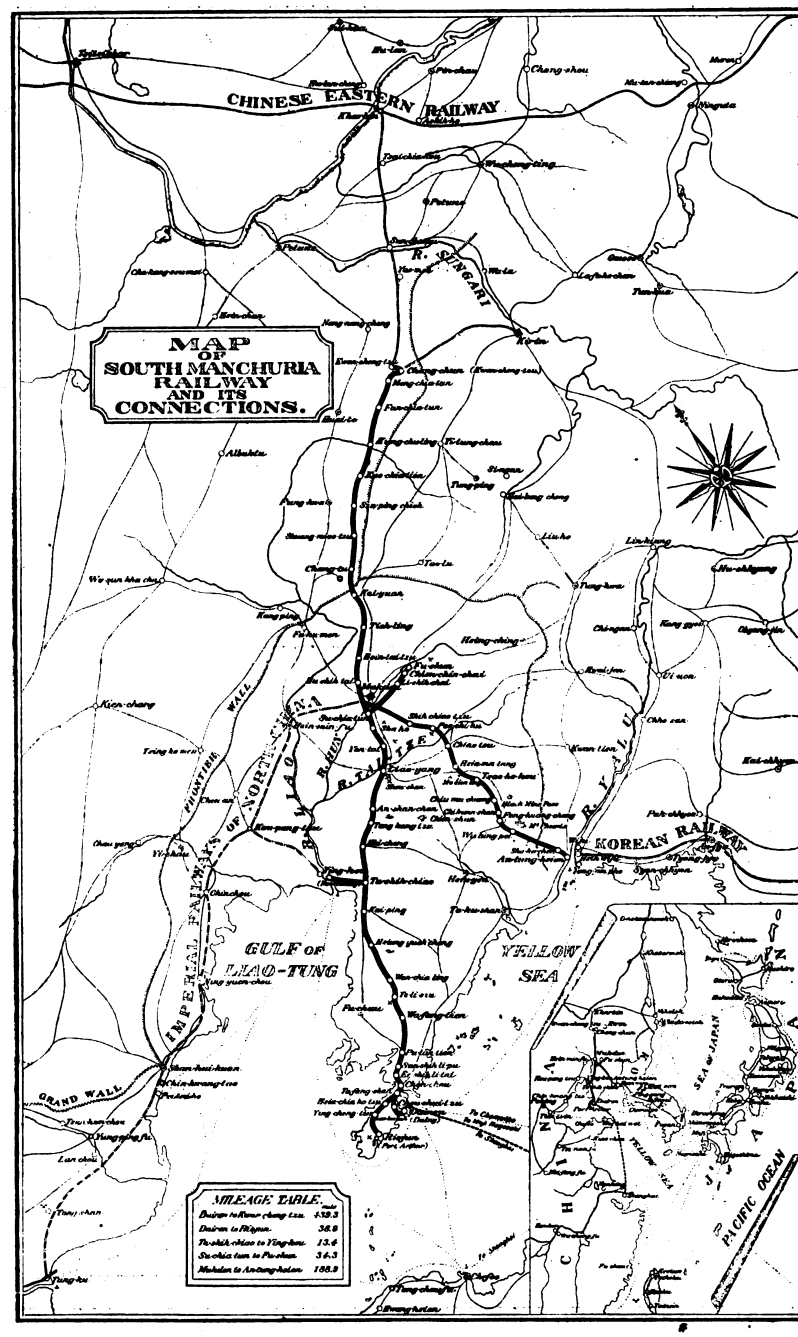
(3) Collect fees from the inhabitants within the limit of land belonging to the railway to defray expense of above.

The establishment of a Japanese settlement at Newchwang in an area not as at Liaoyang, Mukden, and Tiehling, acquired from the Russians, but purchased from the natives, with an administration formerly controlled by the Military Governor of the Leased Territory, was perhaps the first instance of the application of the powers conferred in (2) and (3). If the tracts varying from one thousand to two thousand three hundred acres at the above mentioned cities had been put to a similar use, the Railway Company would have assumed the dignity of a Colonial Administrator, and this circumstance drew on the Japanese much adverse comment.

The Railway is protected by a force of approximately fifteen thousand men stationed at different points along the main and branch lines, and quartered not only in barracks near the stations, but within the neighboring cities as well.

The policing of the Railway is under the supervision of the Governor General of the Leased Territory who has charge also of an elaborate postal and telegraph system. The Manchurian Consular Courts have civil jurisdiction in the Railway Settlements.

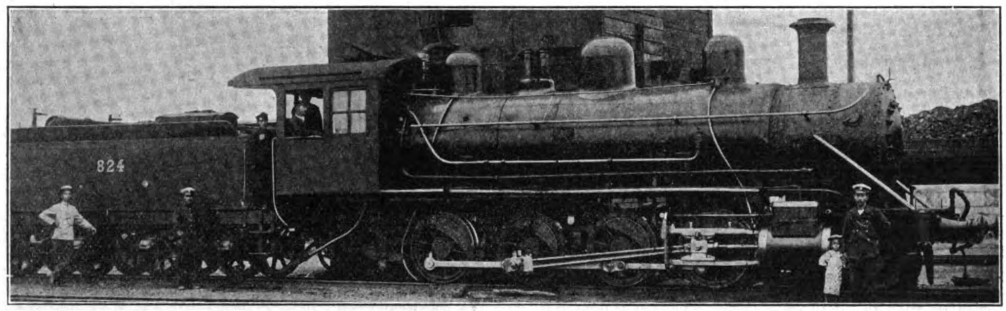
The President of the South Manchuria Railway Company receives Yen 50,000 per annum, the Vice-President 30,000, the six Directors 12,000 each (six thousand salary and six thousand allowances), the Chief Secretary 10,000, and five overseers 1,000 each. At first the total number of officials and Japanese employees was 7,860, giving an average of approximately eleven per mile, and the monthly pay roll amounted to Yen 281,552.35. This force has since been greatly reduced, and the road is now



being run on strict business and economical lines. At present nearly all the construction work is being carried on by Chinese, as the Japanese laborer can not compete with him.

Equipment.—The military authorities, formerly in control of the Railway, declined to furnish information regarding the rolling stock on the line. Notwithstanding the demand for shipping facilities and the stagnation of freight at Tiehling and other northern points, numbers of cars were returned to Japan, and Japanese as well as foreigners and Chinese complained that the Administration, in its haste to reduce the rental paid to the Railway Companies in Japan for the use of their carriages, sacrificed large profits and seriously interfered with trade. Until steps were taken to widen the gauge and new rolling stock imported, there was no amelioration of these conditions.

Seventy box and open freight cars and second and third class passenger cars were all that were in use at one time, while the company was at work standardizing the line and awaiting new equipment from America. It was during this period that the criticisms of discrimination were most severe and many complaints found their way into print without any serious effort being made to analyze the underlying causes.



TYPE OF NARROW GAUGE AMERICAN LOCOMOTIVE IN USE ON S. M. RAILWAY BEFORE CONVERSION TO STANDARD GAUGE

While there was enough ground for some criticism, yet it is unfair to attack an enterprise for incompetency while it is striving to get on its feet.

There are four repair shops at Dalny, one at Liaoyang, three at Kuangchengtzu, and one at Port Arthur.

There are 781 railway buildings, including watch sheds, etc. Practically the only substantial buildings were constructed by the Russians and for a long time were in bad condition, and the repairs attempted by the Japanese were of the most temporary character. Tile roofs damaged by shell fire were roughly patched or where the original covering was wholly destroyed galvanized iron was substituted. Structures that were gutted by fire were lined with a wooden shell eight or nine feet high. Windows were boarded or the broken panes covered with paper and months of rough usage and careless treatment did not improve the condition of buildings which the Russians attempted to destroy as they retreated toward the north.

Here again the critic found fault with the administration, but the stations have since been made as comfortable as possible, and new edifices are going up at the most important places. The railway has confined its energies first to improving the track and rolling stock, so that they could handle the traffic, which would make new stations possible.

There are at the present time 254 permanent and 24 temporary bridges. The former are of no particular size north of Mukden. As the Russians dynamited most of the larger structures between Mukden and Ssuoingkai they must necessarily be rebuilt.

The old roadbed was well laid and the embankments in good condition. Sixty-five pound rails were used and the ties are still serviceable.

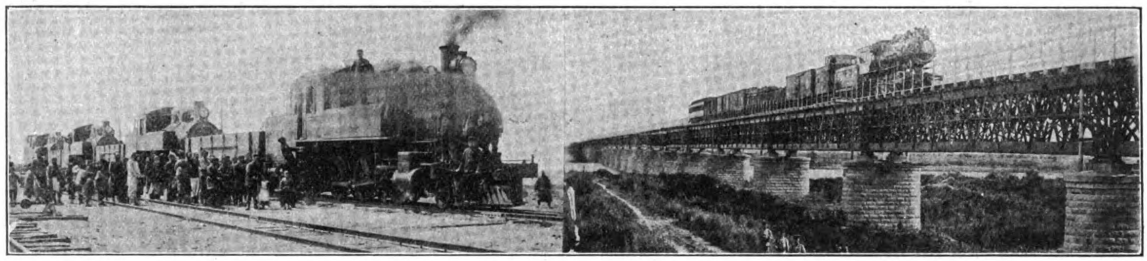
It was stated that three years would be required to widen the gauge, from 3′ 6″ to 4′ 8½″. This has been completed in half the time, and the company is at present double tracking the work from Dalny to Suchiatun to handle coal output of Fushun.

Operation.—The area traversed by the South Manchuria Railway is one of the richest agriculturally in the world, populated by a hard working and thrifty people who as pioneers and settlers are more open-minded than their fellow countrymen in China proper. Each year brings thousands of immigrants from the provinces of Chihli and Shantung, and this human tide is gradually flooding the heretofore uncultivated plain of Heilungchiang and Mongolia, penetrating the forest-clad hills along the Yalu and peopling the valleys in the mountains that rise to the east of the great Liao Plain.

There are a number of prosperous cities, each having served as a market and distributing center for the country in its immediate vicinity, located at intervals of between thirty-five and forty miles, along the railroad between Newchwang and Changchun.

Tungchiangtzu and Fakumen, the former on the banks and the latter not far from the Liao River, and Tiehling which is on the river and railway as well, have been the great centers of the bean trade. Thousands of carts each winter brought their loads to these points for storage and shipment south when the river opened in the spring. Mukden has been the principal fur market and Changchun (Kuangchengtzu) the great distributing center for northern Manchuria and Mongolia.

Ordinary goods were charged 5 sen per ton per mile between Tashihchiao and the north, and between that place and Newchwang, while the same articles may be carried between Tashihchiao and Dalny for two sen per ton per mile. There are no positive proofs that preferential rates have ever been granted Japanese merchants, but there are indications that they have received privileges not accorded Chinese and foreigners, and the discrimination in favor of Dalny, at which place under the old military administration it was practically impossible for a foreigner to engage in trade, has in itself been the cause of much complaint on the part of the foreign merchants of Newchwang.



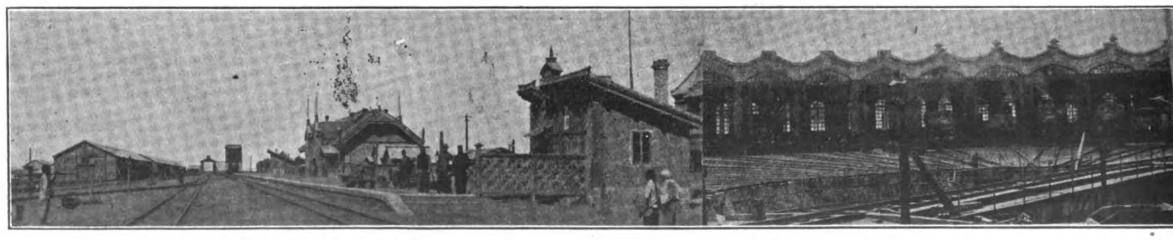
FREIGHT CARS ON THE SOUTH MANCHURIA RAILWAY

BRIDGE OVER THE HUN HO

It has been stated that no single line of Railway can carry the annual Manchurian bean crop to the seaboard, nor can the South Manchuria Railway Company ever be able to furnish adequate transportation facilities. There was in fact, at one time, so much dissatisfaction with the management of the line and the delays of freight in transit that a number of shipments were made from and to Newchwang by cart for not only is the cost of transportation slightly less but delivery may be expected within a certain definite time.

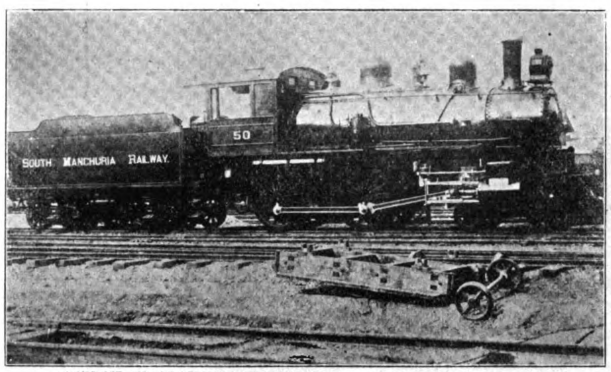
This condition can not be urged as an argument against the road at present, for, with the new equipment, every effort is being made to cater to foreign shippers at Newchwang, and at the same time handle the numerous freight from the north.

The Antung-Mukden line does not pay running expenses at the present time, but it is

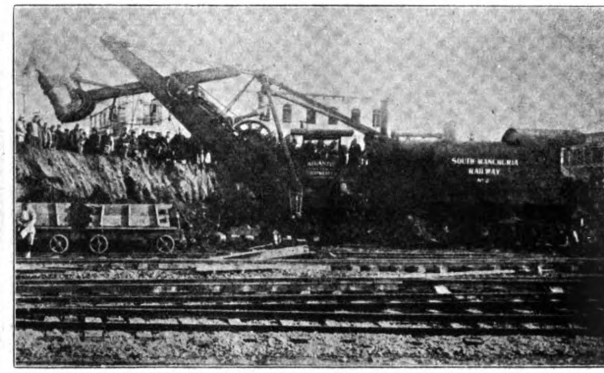


SOUTH MANCHURIA RAILWAY.—STATION AT NEWCHWANG

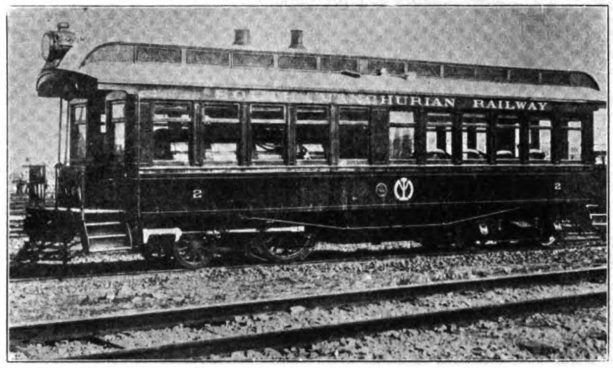
S. M. RAILWAY.—ROUND HOUSE AT LIAOYANG



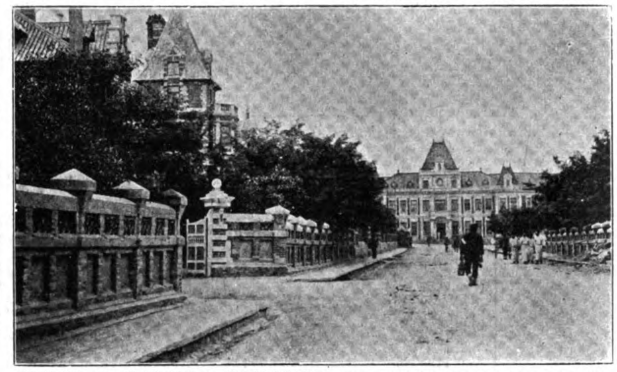
SOUTH MANCHURIA RAILWAY.—AMERICAN LOCOMOTIVE



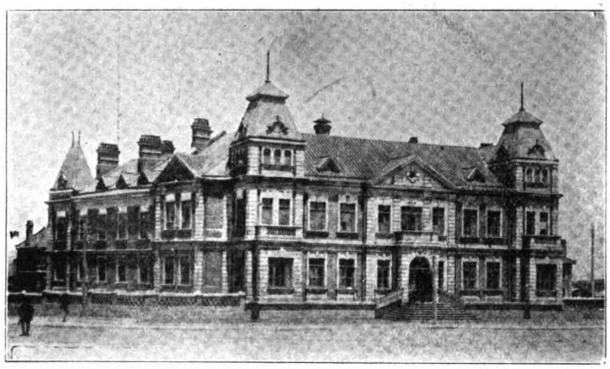
SOUTH MANCHURIA RAILWAY —AMERICAN EXCAVATOR AT WORK



SOUTH MANCHURIA RAILWAY —MOTOR CARRIAGE

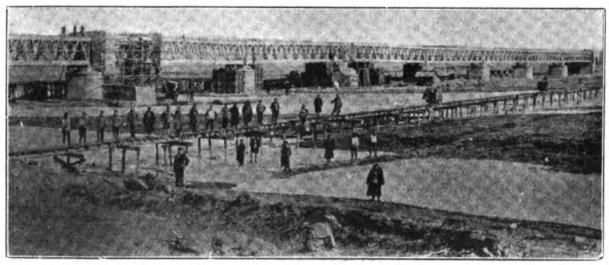


SOUTH MANCHURIA RAILWAY.—OLD ADMINISTRATION OFFICES AT DAIREN (NOW USED AS HOTEL)



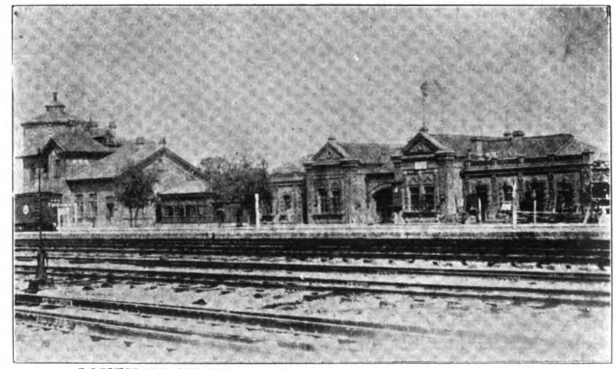
SOUTH MANCHURIA RAILWAY.—NIHONBASHI OFFICE, DAIREN

SOUTH MANCHURIA RAILWAY.—EMPLOYEES' QUARTERS, DAIREN

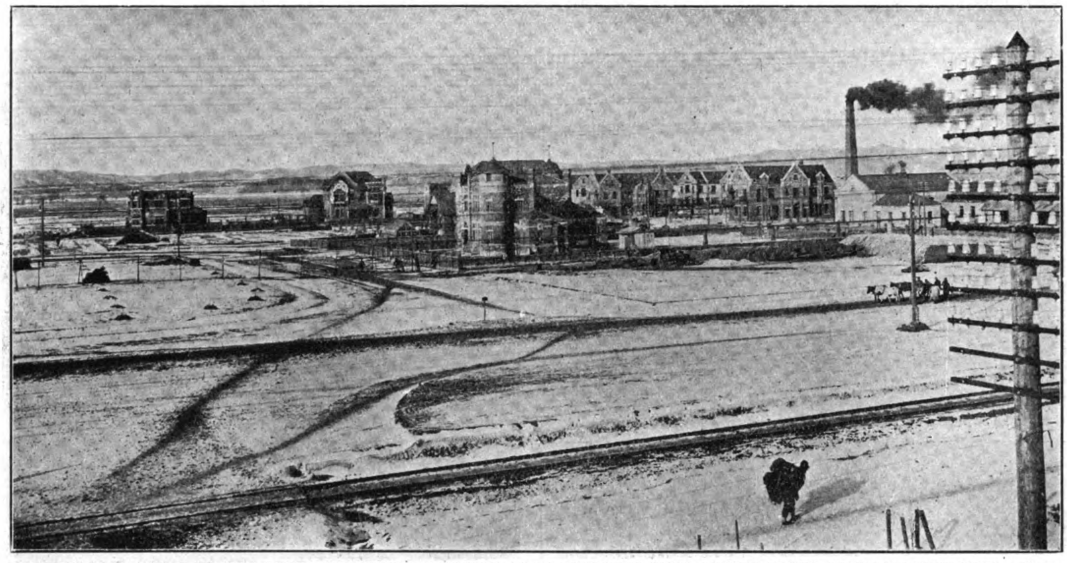


SOUTH MANCHURIA RAILWAY.—BRIDGE NEAR DAIREN

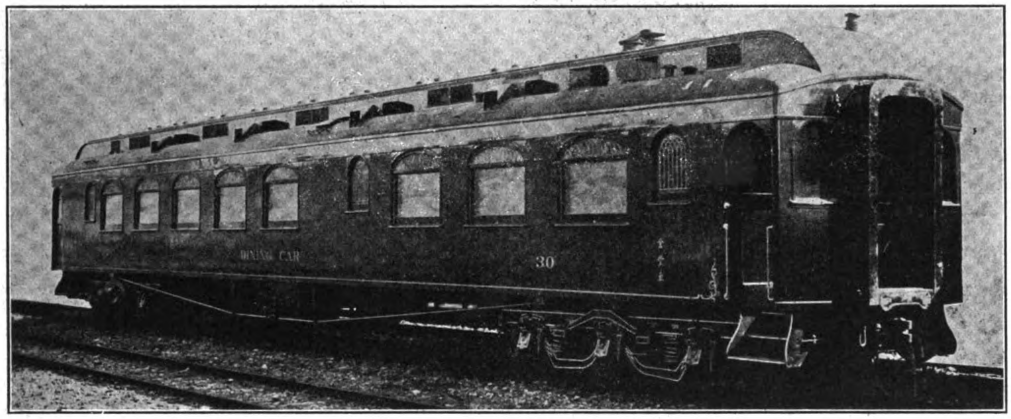
hoped that it will ultimately become profitable owing to the fact that it will form part of the through trunk line to Fusan and will be of great service in developing the mineral resources of south-eastern Shengking.



SOUTH MANCHURIA RAILWAY.—LIAOYANG STATION



FUSHUN COAL MINES OF THE SOUTH MANCHURIA RAILWAY CO.: PANORAMIC VIEW OF THE MINES AT CHIEN-CHIN-CHAI, NO. 2



PULLMAN DINING CAR ON THE SOUTH MANCHURIA RAILWAY

There are now 187 miles of track but the line will be considerably shortened when the gauge is widened and the final roadbed constructed.

The Yentai and Fushun branches, respectively 14 and 25 miles in length, connect the coal mines at these places with the main road.

A railway probably will shortly be constructed between Changchun (Kuangchengtzu) and Kirin, and it is stated that a company has already been organized with a capital of 4,000,000 Taels, and has engaged Japanese engineers to undertake the preliminary surveys.

Principal Officials of the Railway Administration.—President, Z. Nakamura, Dairen; Vice-President, S. Kunisawa, Dairen; Directors, C. Seino, (Tokyo Branch), Tokyo; K. Kubota, N. Inuzuka, S. Tanaka, M. Kubota, S. Okamatsu, K. Nonomura, Dairen; Secretary, M. Numata, Dairen; Chief Railway Engineer, S. Kunisawa, Dairen; Chief Mining Engineer, Matsuda, Fushun Collieries; Chief Accountant, S. Yasuda, Dairen; Construction Engineer, S. Hori, Dairen; Superintendent of Hospitals, Dr. K. Kasai, Dairen; Captain Superintendent, Capt. K. Matsuo, Dairen; Mechanical Engineer, M. Yoshino, Dairen; Harbor Engineer, T. Uchida, Dairen; Electrical Engineer, Y. Kasuya, Dairen; Superintendent of Hotels, K. Uyeda, Dairen; Store Superintendent, S. Yamamoto, Dairen.

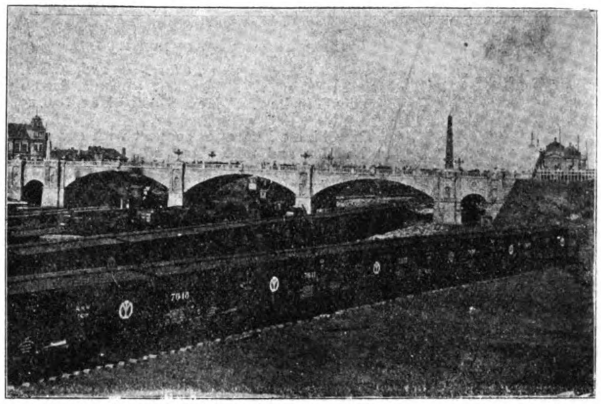
COMPARATIVE SEMI-ANNUAL STATEMENT OF PROFIT & LOSS

		1ST WORKING HALF-YEAR (*April-Sept.* 1907.)	2ND WORKING *CR* HALF-YEAR (*October* 1907 *March* 1908.)
1.	Railway Receipts	Y 4,093,424.860	Y 5,675,462.253
2.	Mine Receipts	647,065.693	837,153.557
3.	Harbour Receipts	146,848.338	425,644.280
4.	Hotel Receipts	16,451.800	42,940.910
5.	Electric Work.	5,674.000	59,247.400
6.	Land	33,537.545	87,256.906
7.	Miscellaneous	59,456.813	412,951.411
	Total	Y 5,002,459.049	Y 7,540,656.717
	LIABILITIES		
		1ST WORKING HALF-YEAR (*April-Sept.* 1907.)	2ND WORKING *DR* HALF-YEAR (*October* 1907 *March* 1908)
1.	Railway Expenditures	Y 2,757,446,446	Y 3,344,168,420
2.	Mine Expenditures	348,251.072	582,963.309
3.	Harbour Expenditures	63,624.343	496,526.229
4.	Hotel Expenditures	32,025.735	58,194.457
5.	Electric Work Expenditures.	39,307.403	61,930.175
6.	Land Expenditures	85,730.665	165,275.457
7.	General Expenditures	688,899.026	708,731.794
8.	Debenture redemption Fund	58,578.000	8,578.500
9.	Interest on Debentures	.....	976,300.000
	Total	4,073,862.690	6,452,667.841
	Net profit	928,596.359	1,087,988.876

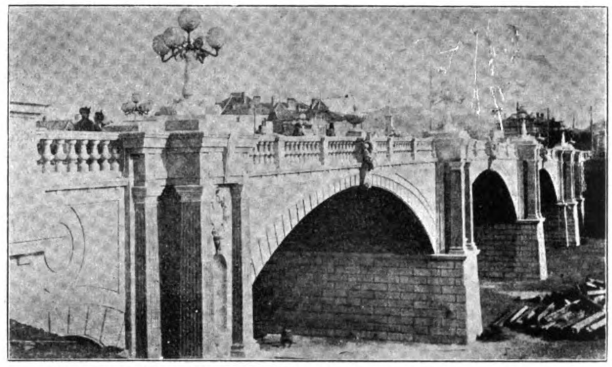
COMPARATIVE SEMI-ANNUAL STATEMENT OF ASSETS & LIABILITIES

ASSETS

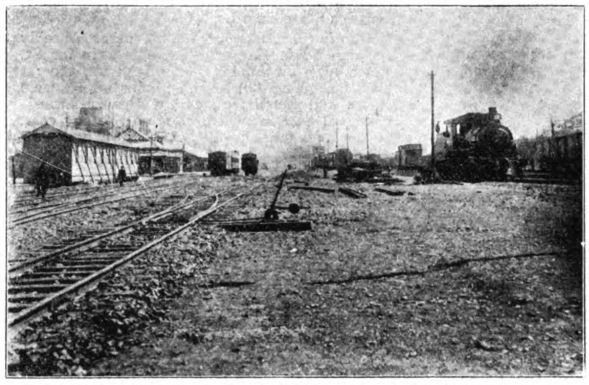
		1ST WORKING HALF-YEAR (*April-Sept.* 1907.)	2ND WORKING HALF-YEAR (*October* 1907 *March* 1908.)
1.	Uncalled Capital	Y 18,000,000.000	Y 18,000,000.000
2.	Properties taken over from the Government of Japan	100,000,000.000	100,000,000.000
3.	Capital Expenditures	4,513,325.415	14,048,757.648
4.	Stores	2,021,887.525	13,796,971.252
5.	Coal in stock.	144,765.398	138,744.713
6.	Ground and Buildings of Tokyo Branch office	183,731.250	633,731.250
7.	Difference between Face Value & Issue Price of debentures	2,928,900.000	2,928,900.000
8.	Suspension account	646,200.755	1,434,322.690
9.	Sundry Debtors	175,076.349	809,046.677
10.	Workshop %.	125,046.955	124,876.111
11.	Deposits	5,007,712.688	13,416,661.310
12.	Cash on hand	122,062.348	144,099.096
13.	Unpaid Debentures	28,117,440.000	.....
14.	Postal and Revenue Stamp %.	.....	3,420.000
	Total	Y161,986,148.683	Y165,449,530.967



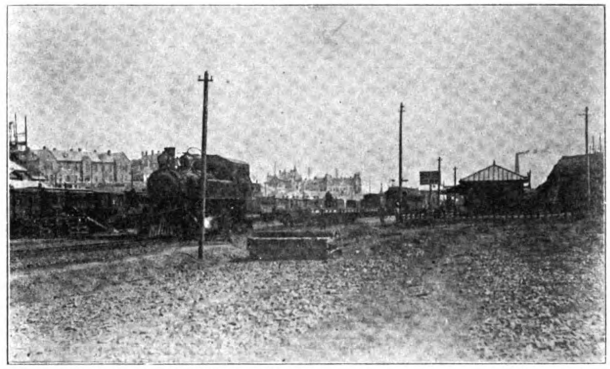
SOUTH MANCHURIA RAILWAY.—NIPPON BRIDGE AT DAIREN



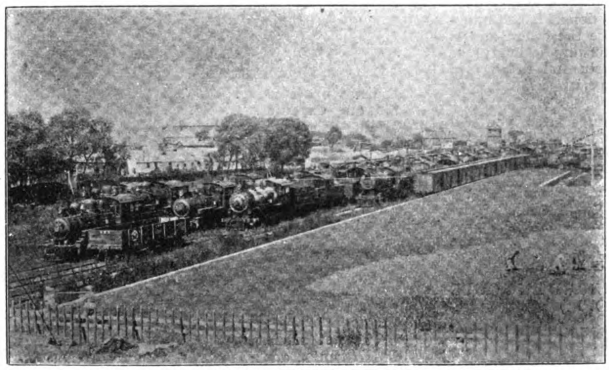
SOUTH MANCHURIA RAILWAY.—NIPPON BRIDGE, DAIREN



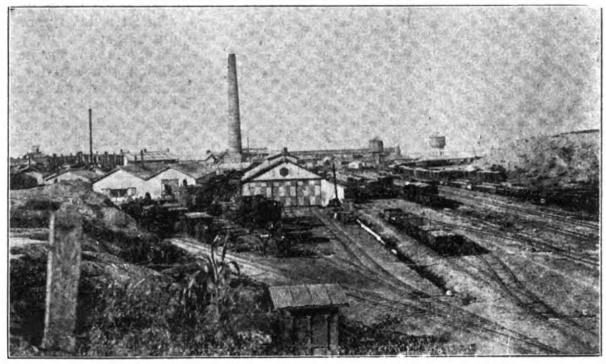
SOUTH MANCHURIA RAILWAY.—DAIREN STATION (AT LEFT)



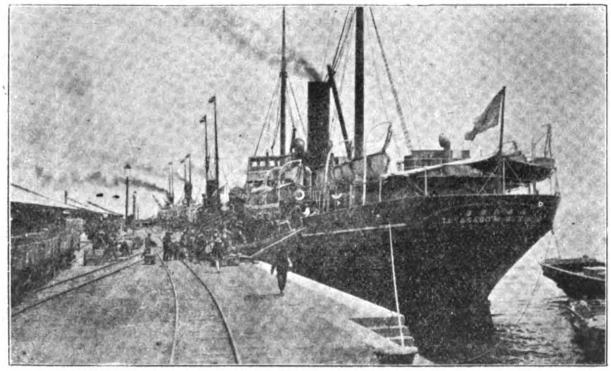
SOUTH MANCHURIA RAILWAY.—DAIREN STATION



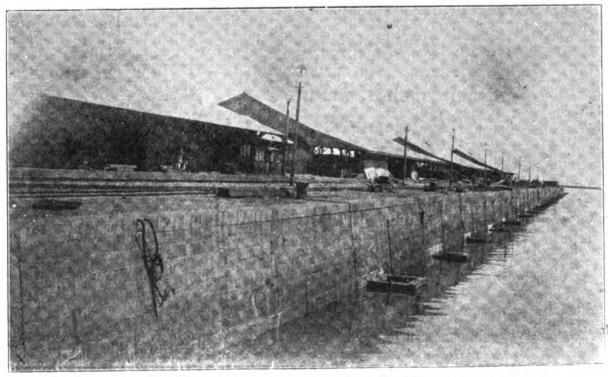
SOUTH MANCHURIA RAILWAY —YARDS AT DAIREN



S. M. R.—VIEW OF YARDS FROM NIPPON BRIDGE



SOUTH MANCHURIA RAILWAY.—WHARF AT DAIREN



SOUTH MANCHURIA RAILWAY.—WHARF AT DAIREN

LIABILITIES

		1ST WORKING HALF-YEAR (*April-Sept.* 1907)	2ND WORKING HALF-YEAR (*October* 1907 *March* 1908.)
1.	Capital Authorised	Y200,000,000.000	Y200,000,000.000
	Capital Subscribed	120,000,000.000	120,000,000.000
2.	Legal Reserve Fund	22,705.890	69,135.710
3.	Unclaimed Dividends	6,675.120	5,372.130
4.	Debentures	39,052,000.000	39,052,000.000
5.	Debenture redemption Fund	58,578.000	117,156.000
6.	Guarantee Deposits	1,935.600	260.000
7.	Suspension%	635.257.232	2,931,281.977
8.	Sundry Creditors	896,659.803	873,379.544
9.	Special Reserve Fund	.....	200,000.000
10.	Land Rent%	.....	5,696.082
11.	Savings Deposits	.....	181,353.410
12.	Brought forward from last half-year	383,740.679	925,907.218
13.	Balance Profit and Loss %	928,596.359	1,087,988.876
	Total	Y161,986,148.683	Y165,449,530.947

SEMI-ANNUAL TRAFFIC RECEIPTS & EXPENDITURES

(SEPT. 1907—MARCH 1908.)

RECEIPTS

		MAIN LINE ANTUNG	MUKDEN LINE
1.	Passenger Traffic	Y1,707,046	Y 91,550
2.	Goods Traffic	3,795,977	77,145
3.	Miscellaneous	3,683	60
	Total	Y5,506,796	Y168,755

EXPENDITURES

1.	Maintenance	Y 815,502	Y149,204
2.	Operation	1,465,514	172,170
3.	Traffic	673,576	68,202
	Total	Y2,954,592	Y389,576

COMPARATIVE STATISTICS OF OUTPUT OF FUSHUN COAL

MONTHS	QUANTITIES MINED	QUANTITIES SOLD	QUANTITIES CONSUMED BY CO.
Oct '07	23,525	1,637	12,970
Nov. '07	21,883	7,286	8,833
Dec. '07	24,934	3,033	9,489
Jan. '08	23,374	6,919	12,110
Feb. '08	17,635	7,082	18,247
March '08	27,082	13,674	24,093
April '08	27,802	5,748	21,033
May '08	31,425	7,623	19,512
June '08	33,504	10,079	30,402
July '08	37,048	10,107	36,807
Aug. '08	34,476	8,847	20,884
Sept. '08	40,274	14,314	23,624
Total	342,962	96,349	238,004

PARTICULARS OF THE RAILWAY AREA

AREA OF THE RAILWAY ZONE

1. Within the Leased Territory	6,637,671	"tsubo."*
2. Along the Main Line outside the Leased Territory	40,107,477	,,
3. Along the Yingkou Branch Line	1,790,102	,,
4. Along the Fushun Branch Line	528,797	,,
5. Along the Antung-Mukden Light Railway Line	1,522,350	,,
6. The balance scattered over a number of places along the Lines	3,585,315	,,
Total	54,171,712	,,

LAND AND BUILDING AREA RENTED

1. The total area of land rented out at the end of July 1908	12,814,083	"tsubo."
2 The total building area rented out at the end of July 1908	12,171	,,

SOUTH MANCHURIA RAILWAY EXPRESS TRAINS

composed exclusively of the Pullman Dining, Sleeping, and 1st Class Cars, are operated Semi-Weekly as follows:

FOR EUROPE

DAIREN

Sunday—Arr. about 6 a. m. by S S "Kobe-Maru" from Shanghai.
Monday and Friday—Dep. 8 a. m.

*A "Tsubo" represents 36 square feet.

CHANGCHUN

*Tuesday and ‡Saturday.—Arr. 5 a. m. South Manchuria Ry. Dep. 5.40 a. m. Chinese Eastern Ry. for Harbin.

FROM EUROPE

CHANGCHUN

§Tuesday and †Saturday.—Arr. 7.30 p. m. (C. E. R. from Harbin.) Dep. 8.40 p. m. (S. M. R.)

DAIREN

Wednesday and Sunday.—Arr. 6.15 p. m.
Monday.—Dep. Noon. (By S. S. "Kobe-Maru" for Shanghai).

Dairen-Shanghai Steamer Service.—Passage tickets are on sale and berths may be reserved at the principal stations of South Manchuria Railway and also at the agencies of the International Sleeping Car & Express Trains Company and also Messrs. Thos. Cook & Son in Europe and the Far East, for the fast passenger steamer *Kobe-Maru* (2,877 tons) carrying a duly qualified surgeon on board, on the Dairen-Shanghai steamer service.

Leaving Dairen—Mondays at noon, and
Arriving Shanghai—Wednesdays.
Leaving Shanghai—Fridays.
Due at Dairen—Sundays, in early morning generally.

FARES:

	1st Class	*2nd Class*	*3rd Class*
Single Trip	-Y-40	-Y-25	-Y-10
Return Trip	-Y-64	-Y-40	-Y-20

How to take the quickest route from Europe to the Far East.—Suppose you take the Wagons-Lits train leaving Moscow every Wednesday and due at Harbin at 7.35 a. m. on the following Saturday.

8 hours and 25 minutes later, you will start for Chang-chun (Kwangchengtzu) Junction of the Russian and the Japanese Lines, reaching there at 7.05 on the same evening, in time to be transferred to one of our Semi-Weekly Express Trains composed exclusively of the Pullman Sleeping, Dining, and 1st-class Cars, leaving Changchun on Tuesdays and Saturdays.

The Saturday Express will depart from Changchun at 8.40 p. m., just like the other, and is due at 5.40 a. m. next morning (Sunday) at Mukden Junction for Tientsin and Peking via Shanhaikwan on the Imperial Railways of North China.

Leaving Mukden 25 minutes later, you will reach Dairen at 6.15 on the same evening, to put up, if you are so minded, at the Railway Hotel "Yamato" which is gaining in favor with the travelers for its irreproachable service and attention.

The passenger steamer *Kobe-Maru*, sailing from Dairen at noon every Monday, will take you to Shanghai on Wednesday.

TIME AND MONEY REQUIRED EN ROUTE (FROM EUROPE.)

MOSCOW-SHANGHAI.

Moscow-Changchun—11 days.
1st class—Rbls. 282 2-5, including Sleeping Berth fee.
2nd class—Rbls. 184 3-10.
The Harbin-Kwangchengtzu Russian Section runs no Sleepers.
Changchun-Dairen—21 hours.
1st class—-Y-39 9-20.
2nd class—-Y-13¾.
Including Express Extra and Sleeping Berth Fees.
Dairen-Shanghai—2 days.
1st class—-Y-40, single trip (return trip -Y-64).
2nd class—-Y-25, single trip (return trip -Y-40.)
Nearly—15 days.

*It connects with the International Train de Luxe, leaving Harbin for Moscow every Tuesday.
‡It connects with the Russian State Express, leaving Harbin for St. Petersburg every Sunday.
§It connects with the Russian State Express from St. Petersburg for Vladivostock, leaving Harbin every Saturday.
†It connects with the International Train de Luxe from Moscow for Vladivostock, leaving Harbin every Saturday.

IMPERIAL RAILWAYS OF NORTH CHINA.

	1st Class.	*2nd Class.*
Mukden-Peking	Mex. $31.30	Mex. $19.60
Mukden-Yingkow	Mex. $ 9.80	Mex. $ 6.15

The Chinese Expresses connect with our own at Mukden and take about 26 hours between Mukden and Peking.

From the Far East to Europe.—Peking-Moscow.

Dep.—Peking, 5.30 p. m., daily, by Imperial Railways of North China.

Arr.—Mukden, 6.45 p. m., on the second day.

Dep.—Mukden, 8.20 p. m., on Mondays, by South Manchurian Express:

Arr.—Changchun, 5 a. m., Tuesdays.

Dep.—Changchun, 5.40 a. m., Tuesdays, by Chinese Eastern Railway.

Arr.—Harbin, 4.10 p. m., Tuesdays.

Dep.—Harbin, 6.25 p. m., Tuesdays, by Russian State Express:

Arr.—Moscow, 7.10 p. m., Thursdays week, Russian State Express.

Harbin-St. Petersburg.—The other Weekly Russian State Expresses leave Harbin for St. Petersburg, on Sundays, at 6.25 p. m., the 1st class fare being Rbls. 298.95, including Express Extra and Berth fees, except Harbin-Kwangchengtzu Section, which runs no sleeping cars.

This trip takes in all 235 hours a little less than 10 days.

St. Petersburg-London.—The Expresses leaving the Russian Capital at 6 p. m. will land you in London, at 10 p. m. of the third day, taking about 53 hours and about Rbls. 98 for the fare.

The report of the Railway for half-year ended March, 1909, is as follows:—

RECEIPTS.	*Yen.*
Railway income	8,164,391
Shipping income	72,489
Mining income	1,380,119
Harbor income	701,033
Local income	134,444
Hotel income	72,718
Electric income	131,146
	10,656,340

DISBURSEMENTS.	*Yen.*
Railway expenses	2,573,818
Shipping expenses	164,646
Mining expenses	859,139
Harbor expenses	518,470
Local expenses	180,648
Hotel expenses	79,195
Electric expenses	125,231
Losses	244,717
General expenses	633,690
Interest on debentures	1,822,427
Debenture reserve	2,112,570
	9,314,551

The net profits of the railway and mining departments, *yen* 5,590,573 and *yen* 520,980, are more than double those of the corresponding period of the preceding year, which were *yen* 2,331,293 and *yen* 254,190, respectively. The debentures reserve and the interest on debentures amount to *yen* 2,112,570 and *yen* 1,822,427, against *yen* 58,500 and *yen* 970,000 in the preceding half-year respectively. It will therefore be seen that the net profit, *yen* 1,341,789, is in the highest degree gratifying.

In the preceding six months the total receipts and disbursements were *yen* 6,959,342 and *yen* 6,187,548 respectively, and the debenture reserve was only *yen* 134,500. The principal cause of the large earnings during the past half-year has been the heavy transportation of beans and beancake.

The quantity of these commodities transported amounts to over 672,000 tons, an increase of 420,000 tons as compared with the preceding half year.

The decrease of *yen* 209,000 in passenger receipts is due in part to an amendment of the fares in June, 1908, and in part to a decrease in the number of long distance passengers.

THE ANTUNG-MUKDEN RAILWAY

(OPERATED UNDER THE MANAGEMENT OF THE SOUTH MANCHURIA RAILWAY CO.)

This hitherto unimportant commercial road has been brought under the international search light by the recent action of Japan in forcing China's hand, and undertaking its reconstruction in the face of her opposition.

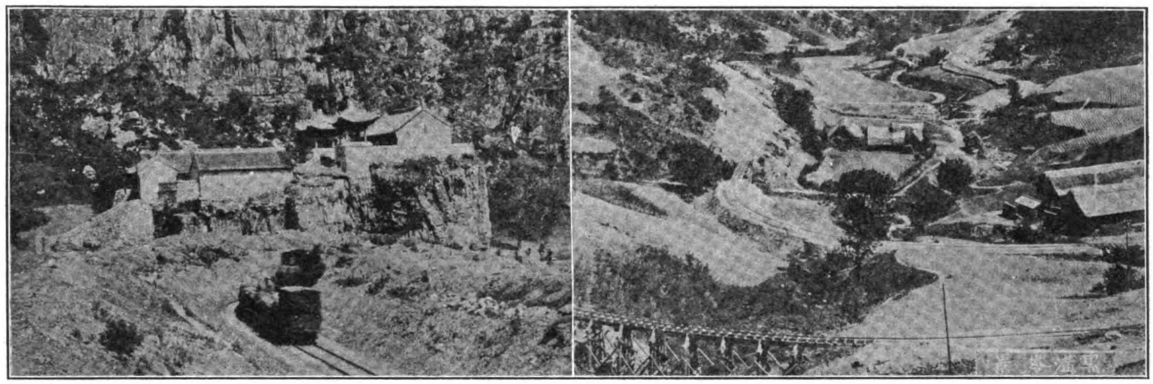
The road is apart from other existing railways in China, as it came into being to meet the exigencies of the Japanese military operations during the struggle with Russia, and was therefore hurriedly constructed. Subsequently, under Article VI of the additional agreement between Japan and China dated Dec. 22, 1905, Japan acquired the right to improve and operate the Antung-Mukden line for a period of eighteen years from the date of the agreement, after which the Chinese government acquired the right to purchase the line at a price to be determined by valuation and arbitration. China stipulated however, that the road should be reconstructed within two years after the military evacuation of the country, which occurred in December 1906. Thus according to the agreement the road should have been reconstructed by December 1908.

The full text of Article VI reads:—

"The Imperial Chinese Government agree that Japan has the right to maintain and work the military railway line constructed between Antung and Moukden and to improve the said line so as to make it fit for the conveyance of commercial and industrial goods of all nations. The term for which such right is conceded is fifteen years from the date of the completion of the improvements above provided for. The work of such improvement is to be completed within two years, exclusive of a period of twelve months during which it will have to be delayed owing to the necessity of using the existing line for the withdrawal of troops. The term of the concession above mentioned is therefore to expire in the 49th year of Kuang Hsu. At the expiration of that term, the said railway shall be sold to China at a price to be determined by appraisement of all its properties by a foreign expert who will be selected by both parties. The conveyance by the railway of the troops and munitions of war of the Chinese Government prior to such sale shall be dealt with in accordance with the regulations of the Eastern Chinese Railway. Regarding the manner in which the improvements of the railway are to be effected, it is agreed that the persons undertaking the work on behalf of Japan shall consult with the Commissioner despatched for the purpose by China. The Chinese Government will also appoint a Commissioner to look after the business relating to the railway as is provided in the Agreement relating to the Eastern Chinese Railway. It is further agreed that detailed regulations shall be concluded regarding the tariffs for the carriage by the railway of the public and private goods of China."

Against the fulfilment of the above concession China has from time to time interposed objections, and employed evasive tactics to nullify its terms. It is entirely probable that a satisfactory compromise would have been reached, had the negotiations remained in the hands of Viceroy Hsu Shih Chang and his foreign educated advisers, but his removal and the appointment of the reactionary Viceroy Hsi Liang, brought about a speedy termination to the controversy. As a last argument Viceroy Hsi took the view that, although the treaty provides for the improvement of the railway, it does not provide for its reconstruction, and what was meant by China was that Japan might repair the line to adapt it for the conveyance of goods, without any change of gauge.

This argument induced Japan to adopt a "strong attitude" in dealing with the matter, and led to the abrupt breaking off of the negotiations and the issuance of orders from Tokio to proceed with the work of reconstruction at once.

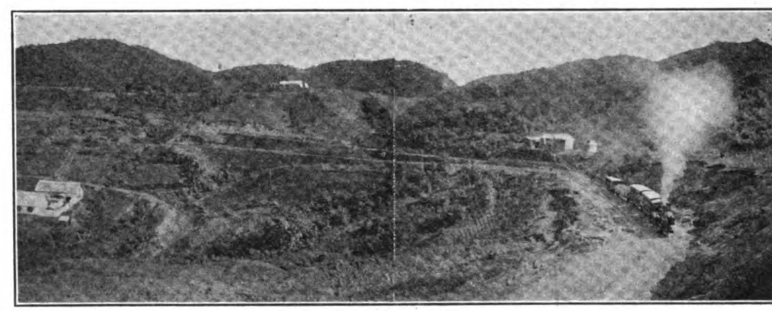


VIEW OF ANTUNG-MUKDEN RAILWAY

It is significant that not one official protest was raised by any of the Powers against Japan's move, and it disclosed the fact that China had alienated her best friends and stood alone. The two powers professing the greatest adherence to the Open Door doctrine, Great Britain and America, were conspicuous by their silence and apparent acquiescence in Japan's action. For two years China has been steadily attacking British interests and concessions all along the line, and one after the other have gone by the board, until it may be said that British diplomacy in China has suffered a complete breakdown. In her hour of trouble, China lost one of her sincere friends, and Britain returned the measure in full by endorsing the move of her ally. There appears to be little doubt that China, encouraged by the professed policy of the American government under President Taft, and the writings of certain American publicists who took the view that any future hostility between Japan and America would have its genesis in Manchuria, looked for something stronger than mere moral support in her controversy with Japan. The failure of America to support China, in this controversy, after all the pro Chinese publicity propaganda at home, has materially reduced her prestige throughout the Empire. It did not take China long to discover her isolation, and to save face she very readily assented to a reopening of the negotiations which terminated in settling all the outstanding issues with japan within 30 days after the crisis.

Japan is now proceeding with the reconstruction of the Antung-Mukden line. A description of the old line follows:

Shortly following the occupation of Antung by the Japanese forces on May 1, 1905, owing to the almost impassable character of the mountain roads in this region and the necessity of facilitating a more rapid movement of supplies, the construction of a light railway was begun by their engineer corps and its extension continued with the advance of the army as far as Shichiaotzu, a point about 30 miles to the southeast of Mukden. The country to the north and west of Shichiaotzu, drained by the Taitzu River, a tributary of the Hun Ho, being quite level and ordinary methods of transportation comparatively easy, this point was made the terminus of the railway until August, 1906, when the Okuragumi, a large Japanese concern, received from the military authorities a contract to extend it to Mukden. The construction of this section, covering a distance of 33 miles, was finished in less than one and one-half months.



BLACK MINE PASS ON THE ANTUNG-MUKDEN RAILWAY

While the railway follows practically the same route as when first laid, considerable grading has since been done, unsafe wooden bridges have in several places been removed and the gullies filled in with crushed stone, and at a few points the distance has been shortened and crossing over the mountains made less dangerous by cutting through ledges. The work of improving the road is still going on, gangs of Chinese workmen, each under a Japanese foreman, are scattered along the entire distance, and ties as well as other railway materials seem to form the bulk of the freight at present handled. No tunneling has yet been done and probably will not be until the survey of the permanent railway has been completed.

Wherever it could be done without making the route excessively circuitous, the road has been constructed side by side with river-beds, sometimes following a comparatively straight line and again winding among the mountains. There are four points at which the line crosses the tops of the mountains and where the trains either circles around the spurs or moves from side to side after the manner of a heavy-laden team going up or down a hill. At one place the line recrosses itself in parallel tiers one above the other as many as five times. Frequently the steep grades (1 in 30), the sudden turns and unstable wooden bridges follow one another in such a manner as to make the descent especially dangerous. Accidents are said to have been of very frequent occurrence formerly, but improved grading with crushed stone and more careful methods of operation have greatly lessened their number.

The gauge is 2 feet 6 inches. The rails as well as the rolling stock, including locomotives and trucks, were supplied by the Baldwin Locomotive Works. The system possesses altogether 150 locomotives, 100 of these being of 16 and the remainder of 11 tons. The freight cars are all open and similar to those used for hauling sand in America. There are two sizes, one with a capacity of 2, and the other 5 tons. The entire carrying capacity of the railway is only some 1,200 tons. Besides these open cars there are a number with tops and designed especially for the passenger traffic. At both Antung and Mukden there are several wooden buildings, which were once used for the storage of military supplies but at present seem in large part to be lying idle. The intermediate points also have storing facilities, used principally for the supplies of the railway employes, as well as substantial buildings of Chinese architecture for stations and the dwelling-houses of the railway officials.

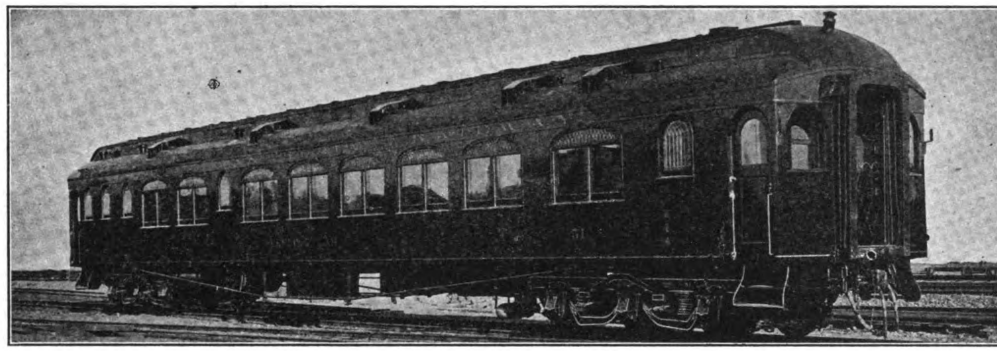
The line was formerly under the control of the military authorities until its transference to the South Manchuria Railway Company, in December of 1906.

The line was opened to general traffic, both freight and passenger, in August, 1908. Two schedule-time runs are daily made from each end in addition to more or less regular ones between some of the intermediate points. The journey from Antung to Mukden requires two days. The through trains both leave in the morning, one at 6 o'clock and the other at 9, and reach Tsaohohu (Sokako) 12 hours later. Operation after dark would of course be subject to a great deal of risk, so that passengers are obliged to pass the night at this point, resuming their journey on the following morning at the same hours as before. Tsaohohu is not at all a suitable place to recover from the day's fatigue. It has a number of Chinese inns and one in Japanese style, neither particularly inviting to the foreigner. The traveler must bring his luncheon with him to Antung, as neither food nor drink can be secured until reaching Tsaohohu, and unless he is sure of satisfying his hunger with *cuisine japonaise*, which is all that is to be had here, he should equip himself at Antung with two days' subsistence.

At present, however, the importance of this railway as a channel of immigration is slight and even with improved accommodations it can give but little encouragement in the region traversed by it to Japanese colonization or the small commercial enterprise so characteristic in parts of Manchuria more easily accessible. Indeed, there is nothing perhaps except the spirit of adventure which would induce the merchant, prospector or immigrant to avail himself of this route for reaching interior Manchuria. The train leaving at 9 o'clock consists entirely of freight-cars. Two or three of these may be loaded with freight, but the most of them are intended for passengers, who clamber into them pell-mell and struggle among themselves for squatting room. The discomfort of travelling in this manner during a heavy rain or a cold north wind can readily be imagined. The earlier train has attached one or two of the passenger-cars already mentioned. These, however, are not any more comfortable to sit in than the freight-cars and preferable to them only in affording shelter from inclement weather. In fact, the experience of traveling by this route probably helps one to form a good picture of what the railway was in its early days and the distance, 187 miles (100 as the crow flies), is undoubtedly the greatest covered by a line of its kind. The average speed is about 9 miles an hour, although as high as 12 miles is reached on the level.

As already stated, the greater part of the freight handled consists of railway supplies. The amount of general goods carried is almost too small to be considered, and the supposition that the absence of a custom house at Antung has been taken advantage of to ship large quantities of merchandise into the region made accessible by this railway is not borne out by the actual conditions. The rate, 10 sen (5 cents) a ton per mile, for most commodities is so high as to leave only a small margin of profit and in some cases is entirely prohibitive.

The standard gauge railway to connect Antung with Mukden, it is expected, will follow the same general course as the present one.



PULLMAN SLEEPING CAR ON THE SOUTH MANCHURIA RAILWAY

NEW JAPANESE BARRACKS FOR THE RAILWAY GUARDS AT MUKDEN

The Japanese railway administration hopes that within two years the standard gauge will be finished at a cost of ¥23,000,000. The reconstruction is divided into 14 sections. From Antung the line will run to the trade mart of Fugnhuangcheng (36 miles), thence through the mountainous district of the Motienling by a series of tunnels to Penhsi-hsien, an important coal centre, crossing the Tatsu River just before reaching this place, and thence a further distance of 50 miles to Suchiatun, 10½ miles to the south of Mukden, at which point a junction is to be made with the main line. Suchiatun is also the junction connecting with the Fushun collieries. The total length of the new line will be 170 miles.

The railway bridge over the Yalu River will, it is anticipated, be completed within the same period. Thus through communication on a standard gauge railway from Fusan to Mukden will be established. This route will doubtless attract many travellers from Japan to North China and through to Europe *via* the Trans-Siberian Railway, and will be an important channel for mail communication.

CHINESE EASTERN RAILWAY

MAJ.-GEN. HORVATH,
GENERAL MANAGER AND CHIEF OF THE RAILWAY STAFF OF THE C. E. RY., THE DOMINANT SPIRIT OF HARBIN

VICTOR F. LUBA,
RUSSIAN CONSUL-GENERAL AT HARBIN, WHO WAS RECALLED

PRINCE KHILKOFF,
CHIEF ENGINEER AND ASSISTANT CHIEF OF THE C. E. RY. STAFF, HARBIN

MAJ.-GEN. CHICHAGOFF,
CHIEF OF THE RAILWAY GUARDS, HARBIN

The Trans-Siberian railway as originally projected followed the bank of the Amur River from Stetinsk to the Ussari, a wide detour through a difficult extent of country, and the Russians naturally turned with envious eyes towards the more southern route through Central Manchuria, whose wide level expanse offered no serious engineering difficulties. To reach Vladivostock via the Amur River, entirely within Russian territory, the railway had to follow the long frontier on a useless detour, while the route across Manchuria shortened the distance by about 500 miles. The Siberian road was officially started in May 1891 by the Czarevitch at Vladivostock, and during its construction the war between China and Japan occurred. When the victorious Japanese exacted from China a portion of Manchuria under the treaty of Shimonoseki, Russia interfered and prevented this alienation of Chinese territory. As compensation for their friendly offices Russia secured the concession to build a railway across Manchuria to connect her Siberian and Ussuri Systems. This instrument was duly entered into between China and the Russo-Chinese Bank, an irregular offshoot from the Russian Finance Department. The Bank was established in 1895 for the purpose of furthering Russian commercial and political enterprises throughout Eastern Asia, and while the head office is at St. Petersburg, the most important office is at Shanghai.

The Agreement between the Chinese Government and the Bank was signed September 8, 1896. The Company was to be organized with a capital of 5,000,000 roubles, to be subscribed to by Russian and Chinese subjects exclusively. It also provided for the survey of the line through Manchuria towards Vladi-

THE GREAT ADMINISTRATION BUILDING OF THE C. E. RAILWAY

vostock covering a distance of about 950 miles in Chinese territory and its construction. The gauge provided for was five feet. The line was to be the property of the company for 80 years upon the expiration of which time it reverted without cost to China. It also provided for the repurchase of the line in 36 years after it was put in operation at a price representing the cost of the line and interest. It further provided that upon the opening of the line for traffic the company would pay the Chinese Government the sum of Tls. 5,000,000.

In the spring of 1897, work of construction was started and the same year the city of Harbin was founded and made the headquarters of construction. The following year, Russia secured a lease from the Chinese Government of the Liaotung peninsula, extending over a period of 25 years and with it, a concession to the Manchurian Railway Company to construct a southern line from Harbin to Port Arthur of five foot gauge. The construction of the line was pushed ahead rapidly and by the date of the boxer outbreak, with the exception of a number of bridges, it was practically completed. During this trouble much of the line was destroyed and especially between Harbin and Port Arthur. The work was, however, renewed with vigor and in the fall of 1901 the entire Chinese Eastern Railway connecting the Trans-Siberia with Vladivostock across Manchuria and the line south from Harbin to Port Arthur was completed. This system in Manchuria in all measured about 1,600 miles.

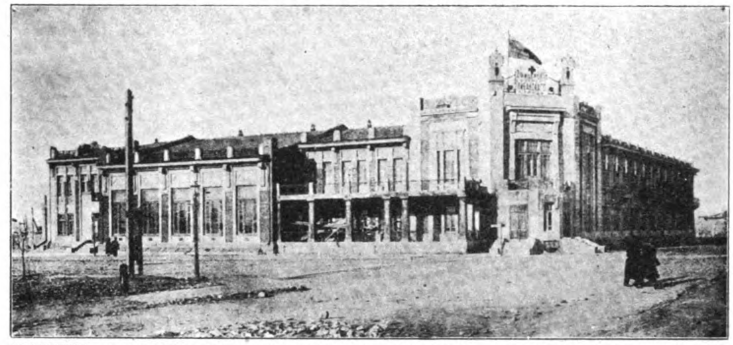
The cost of the road to Russia is estimated at 300,000,000 roubles ($150,000,000 gold) or roughly $90,000, per mile. This is exclusive of 250,000,000 roubles spent in building Port Arthur, Dalny, Harbin, fortifications and other enterprises outside the strictly railway work. An article in the FAR EASTERN REVIEW for May 1909, describing the growth and decline of Harbin is largely typical of the history of the Chinese Eastern Railway. Extracts from this follow:

"In September 1896, the agreement between the Russo-Chinese Bank and the Chinese Government was concluded for the construction and management of the Chinese Eastern Railway. This was the link which was to bind the Pacific littoral with the great Trans-Siberian Railway, through Chinese territory in northern Manchuria, thus avoiding the greater task of following the crooked Amur River in the endeavor to seek an outlet to the sea. At the same time it created a new line of attack and approach to the goal at Peking, and the ultimate absorption of Korea. In the spring of 1897 the work of construction was commenced, and in the same year the city of Harbin was founded and made the administrative and working headquarters of the new enterprise. Harbin, the railway center of construction, was the ideal location for the concentration of material and forces, and was to be, in addition, the strategic center of Russia's new empire, and but for the unexpected war with Japan her purpose would have been crowned with success. From armed guards and administrative control to permanent occupation and annexation was only a short and easy step with decrepit old China, and Harbin was to be the center of the web which would enmesh the Three Eastern Provinces. From the new base Russia was to dominate Far Eastern trade, and Harbin was to become the Moscow of Asia, the Minneapolis of the Far East, and the Chicago of the Orient, and the products of her mills would be distributed by the railways radiating from the new city, and the network of waterways connecting with the Sungari.

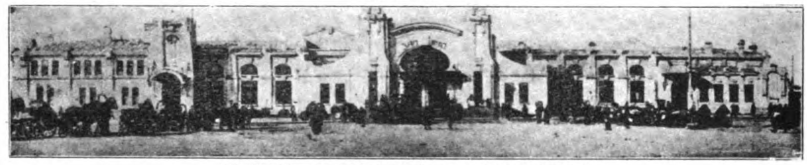
"So the city was located on the banks of the Sungari River at a point where the railway was to cross the stream, and where the connection southwards to Dalny was afterwards to be made. Situated 350 miles west of Vladivostok, and 600 miles north of Dalny, it was in the geographical center of Manchuria. When work on the railway at the eastern and western ends was commenced, vast stores of material were shipped by river craft up the Sungari to the new town so that work could also proceed from the center.

The old town was the first to be thrown open by the Railway Company for the purchase

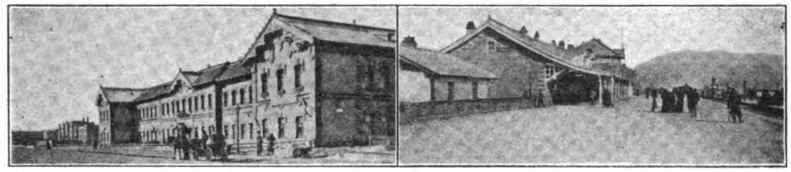
HARBIN.—ADMINISTRATION BUILDING



HARBIN.—THE OFFICIAL RAILWAY HOTEL, NOW USED AS THE RUSSIAN CONSULATE GENERAL



HARBIN.—FRONT VIEW OF RAILWAY DEPOT

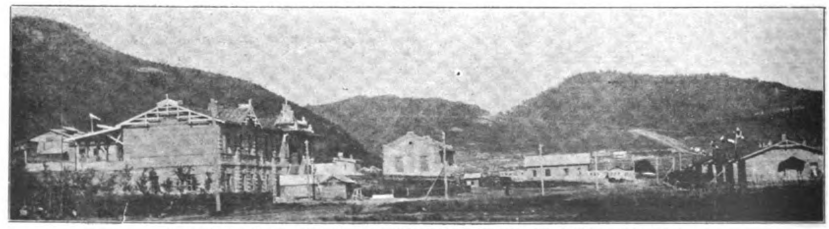


HARBIN.—HEADQUARTERS OF GENERAL STAFF FOR TRANS-AMUR DISTRICT

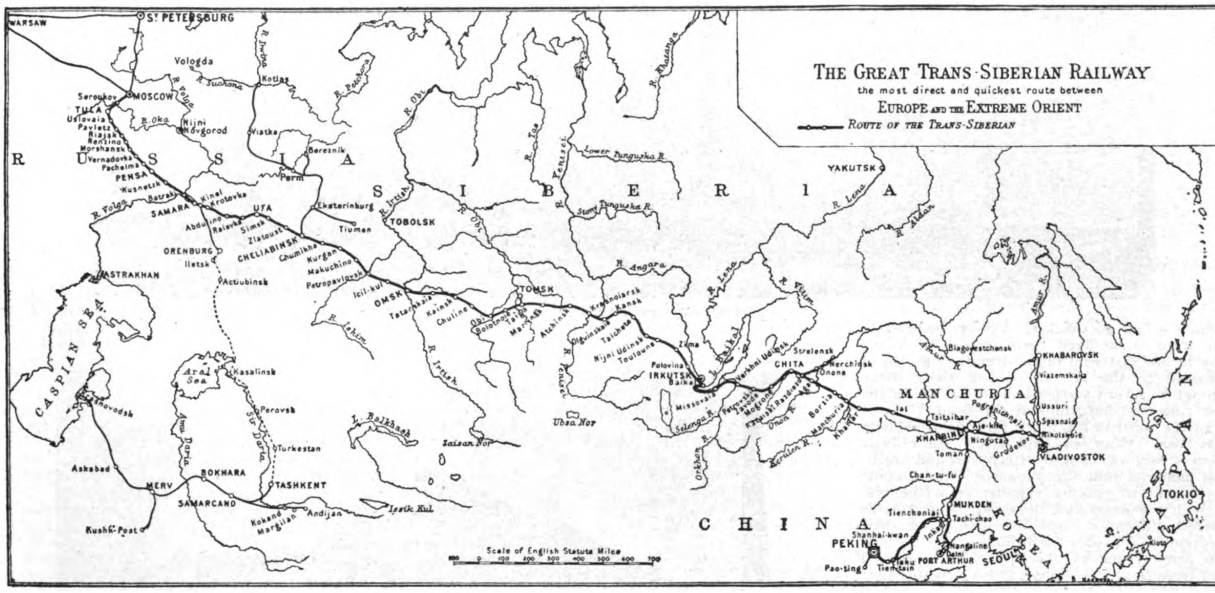
CHINESE ENGINEERING RAILWAY.—STATION AT IMJANPO. HAS LARGE BREWERY

CHANDECHEZ, A STATION ON C. E. RY. BETWEEN HARBIN AND MANCHURIA

CHINESE ENGINEERING RAILWAY.—STATION AND YARDS AT MANCHURIA



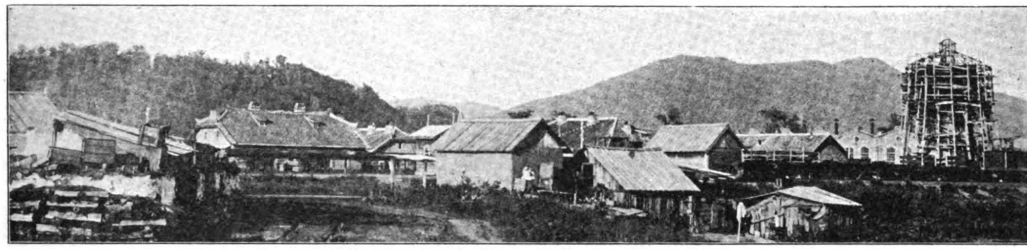
A TYPICAL STATION ON THE CHINESE ENGINEERING RAILWAY



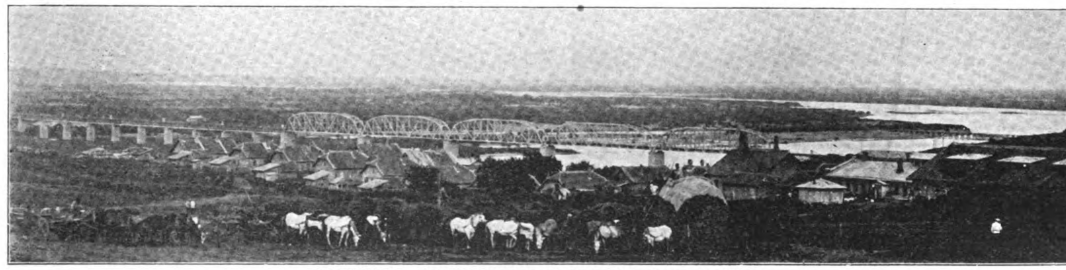
of land by private parties, at a rate of a little over one cent gold per square foot, but the price was soon raised to three cents per foot and over; the official town was then laid out and immense building plans entered into, while in the river town the prices soared to over 17 cents gold per square foot, and many large and substantial brick buildings were erected. Within a year from the time this section was opened to the public, it is estimated that over $5,000,000 gold was expended in building operations by the public. Additions were laid out adjoining the administrative town, and the land was immediately taken up by speculators and resold at prices as high as $5.00 gold per square foot. Nearly 3,000,000 roubles were received by the Railway Company from the sales of lands to private parties in a couple of years, all secured on an eighty-six years' lease.

Then followed the industrial boom. With a country rich in wheat and cereals, minerals and timber, flour mills, mines and saw mills were projected and erected. Breweries followed, vodka factories for the soldiers, meat packing plants and other large schemes were promoted. Prosperity was in the air. Everybody seemed to have money, and it was spent like water. Easy come, easy go. The Government was rich, and St. Petersburg was far away, and the high officials were too preoccupied with getting their share of the official "squeeze" to pay heed to the petty "graft" of the lesser employees, and the saturnalia whirled on with no thought of the morrow, or of the day of reckoning. It was a good thing, and it had to be carefully nursed and preserved. Russia for the Russians, and Manchuria for the elect and out with the foreigners.

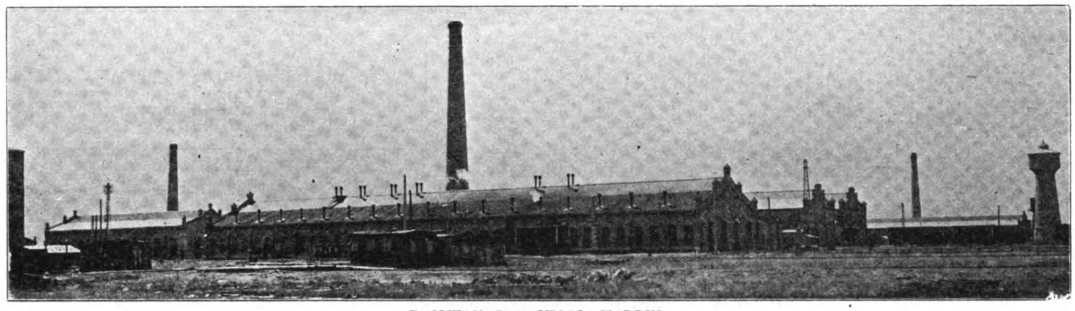
Then came the war. The immense armies of the Czar, transported across Siberia, came to a halt at Harbin and were here encamped and forwarded on to the front as their time came. Here was the real military headquarters, here was the base, in which the commissariat, and quartermaster's stores were stacked up for reshipment further south. For the Russian the war began when he left Harbin for the front and ended when he returned. Here the officers, left their families, some wives, some mistresses, and here the camp follower halted and went no further, here the gamblers and sharpers plucked the easy going and good natured soldier, and the commercial adventurer divided the loot with the mercenary official. To Harbin swarmed the women, who made it their abode, bringing with them the luxuries of Paris and the life and atmosphere of the boulevards. Theaters multiplied, cafés chantants were in full blast, drinking saloons and pleasure resorts abounded. No less than 26 music halls catered to the pleasures of the soldiers, running day and night without pause. The pace was swift, life was short, and extravagance and recklessness the order of the day. Champagne flowed like water. Magnums took the place of the ordinary pint or quart bottles. They cost more and the



CHINESE EASTERN RAILWAY.—A TYPICAL STATION



HARBIN.—THE SECOND BRIDGE OVER THE SUNGARI

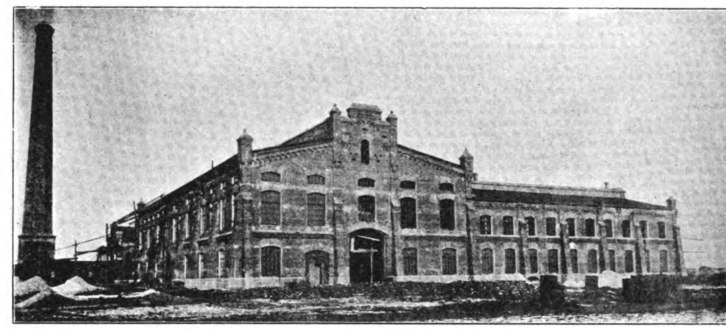


RAILWAY CAR SHOPS, HARBIN

money would go quicker. Officers ordered to the front squandered their savings or year's pay in one last wild orgie, drinking the cup of pleasure to the last drop, and those lucky enough to return started in to make up for the lost time and hardships at the front.

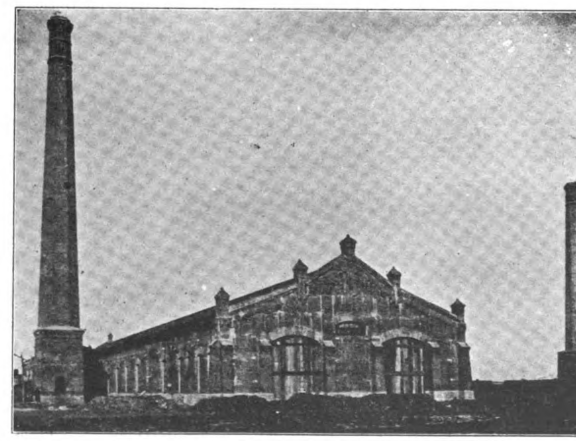
In the midst of the whirl, the industrial boom was born. Flour was expensive. The railway from Russia was choked with troops and urgent war material and the Japanese cruisers made it difficult to procure supplies from the sea, so with a country rich in wheat, flouring mills offered a solution, and the money for their erection was readily forthcoming. As long as the army remained the market was assured and large profits possible. It is calculated that 85 per cent of the fodder and provisions supplied were of local production. No thought seemed to be given to a return to normal conditions nor it appears was any attempt made to secure a market for the by-products. The investment was made on the demand created by the army and shareholders seemed to labor under the impression that the abnormal conditions would obtain indefinitely. Breweries, four of them were hastily erected; vodka distilleries, eight were placed in operation; meat packing establishments, brick making plants, saw-mills, a glass factory and other industries were rapidly financed and carried through. Profits were enormous, and expenses were saddled on the enterprises in accordance. High salaried Director Generals, Directors, Managers, Superintendents, and a host of sinecures were created and fastened on the companies before the real practical head of the concerned was reached. It is stated the administrative cost of the milling companies averaged 37 per cent of the total. Everything was lovely, and as long as the boom lasted, no one cared to look ahead for the hard times coming.

And behind all this whirligig of pleasure, vice, war, and industry stood the Russo-Chinese Bank, the magician that had waved the wand and brought it all about. Housed in its fine structure of stone, having its own heating plant and electric lights, erected at a cost of over 200,000 roubles, the Bank was the center, the hub around which Harbin revolved. Making no loans on realty, the management confined its efforts to advancing capital for current substantial business, and extending credits to Chinese merchants purchasing stocks of Russian goods, in addition to the regular exchange business. The results were profitable. Exclusive of purely government and railway business, the daily transactions exceeded 500,000 roubles just prior to the war, and this must have been increased owing to the swollen volume of trade. Cotton goods, sugar and other Russian products were thus introduced into the Manchurian markets. Imported free of duty through Vladivostok, favored with special rates on the railway and long credits by the Bank, Russian goods threatened for a while to secure a firm foothold. Encouragement of all kinds was given to the Chinese and Russian merchants, but to no outsiders. Harbin was to be the entrepot for Russian trade in the East, and the Open Door was only a dream of foreign diplomats that did not embrace Northern Manchuria. Millions were necessary to develop the scheme and millions were lavishly expended to further the adventure. Russia poured into her Manchuria Railway schemes over 300,000,000 roubles, and another 250,000,000 roubles in

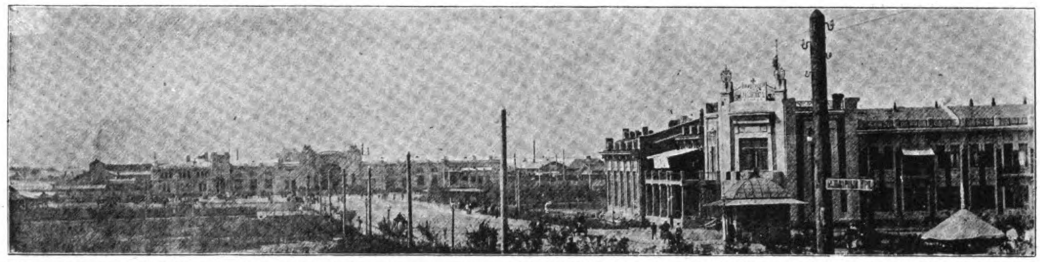


RAILWAY SHOPS AT HARBIN

CHINESE EASTERN RAILWAY, MACHINE SHOPS, HARBIN



MACHINE SHOPS OF THE C. E. RY. AT HARBIN



HARBIN: THE MAIN STREET LEADING TO THE RAILWAY STATION. THE OFFICIAL HOTEL AND RUSSIAN CONSULATE GENERAL TO THE RIGHT

erecting the cities of Dalny, Port-Arthur, and Harbin together with the fortifications and other permanent improvements. How much of this vast sum was actually expended no one will ever know. When the time came after the war for auditing the accounts, a convenient fire destroyed the building containing all the records, so the rendered figures had to suffice without comment.

The Treaty of Portsmouth came as a surprise to Harbin. Another few months and the tables would have been turned and the dreams of Empire realized. For Harbin merchants it was difficult to realize that the end had come, and as the aftermath set in and the soldiers returned to their homes and business began to decline, they still cherished hopes of a bright commercial future. No systematic or determined effort had been made by the Russian merchants to secure the native trade, despite the efforts of the Banks and the authorities to encourage and assist this movement. It was much easier and more profitable to cater to the good-natured, pleasure-loving, spendthrift soldier, than to get out and build up a trade with the economical and impoverished native. The Bank and the Railway whose future prospects and success depended on solid native trade, catered to this element, but with only nominal success. Russian kerosene, oils, matches, sugar, cotton goods, and cheap novelties were the only items of any importance dealt in. The purchasing power of the native was small, and Northern Manchuria is sparsely settled, and the market even for these necessities was limited. So with the eventual withdrawal of the Russian army, and the departure of the swarms of adventurers, camp followers and women, the merchants were face to face with the worst that could befall them—a return to normal times, and no market. The best customers for the flour mills, the breweries, and vodka factories were gone. The natives prefer their own crudely ground coarse flour, they don't drink beer or vodka, so the main industries of the city found no market for their output. The theaters, bereft of their patrons, closed; the music halls followed, and with the departure of the extravagant female spenders, the jewellers and department stores lost their best paying trade. Houses that were at a premium shortly before were vacated, new tenants came not, and a decline in real estate value followed. The costly block of stores, constructed in the center of the town for the largest Moscow merchants remained unoccupied. The brick factories and saw mills closed for lack of business. No one wanted to build. The glass factory suspended operation. The flour mills were forced to close down. One brewery remained at work. The hotels were emptied of their patrons. The large official hotel was converted into the offices of the Russian Consulate General. And so Harbin at last came to a realization of the exact state of affairs.

The town to-day presents an appearance of premature decay. Grass grows in the streets, no smoke issues from the tall chimneys of the mills. The large and costly stocked department stores open for the day and only a casual customer appears. Theaters have closed. Only one or two cafés chantants invite the midnight pleasure seeker, in place of the previous twenty-six. The houses are out of repair and the plaster ornamentation of many of the large buildings has fallen away disclosing the naked lath, revealing the fact that the buildings in part were only imitation stone. The town is existing on the expenditures of the railway. The salaries of the employees maintain the few stores, and the awarding of a contract for supplies is eagerly anticipated by the merchants. The railways and the Bank are making strenuous efforts to renew a spirit of confidence and promote trade with the natives, but there is a lack of co-operation on the part of the Russian merchants. But powerful as they are, the Railway and the Bank cannot carry the load indefinitely. There must be an end. The last financial year of the Bank was closed without the payment of the customary dividend. The Railway is losing at the rate of 5,000,000 roubles per annum. The budget for 1908 was based on an estimated income of Rbs. 15,857,793: expenses (including Rbs. 625,388 interest on bonds) were Rbs. 19,265,110, or an estimated deficit of Rbs. 3,407,317. The actual deficit is, however, claimed to be in the neighborhood of Rbs. 5,000,000.

Yet there is apparently no sign of retrenchment. The railway administration building swarms with employees, and extravagance is still the order of the day. War prices continue, or at least charges are higher in Harbin than in any other port of the Orient. Hotel charges, droshky hire, rents, and the general cost of living is at least double the cost in Shanghai.

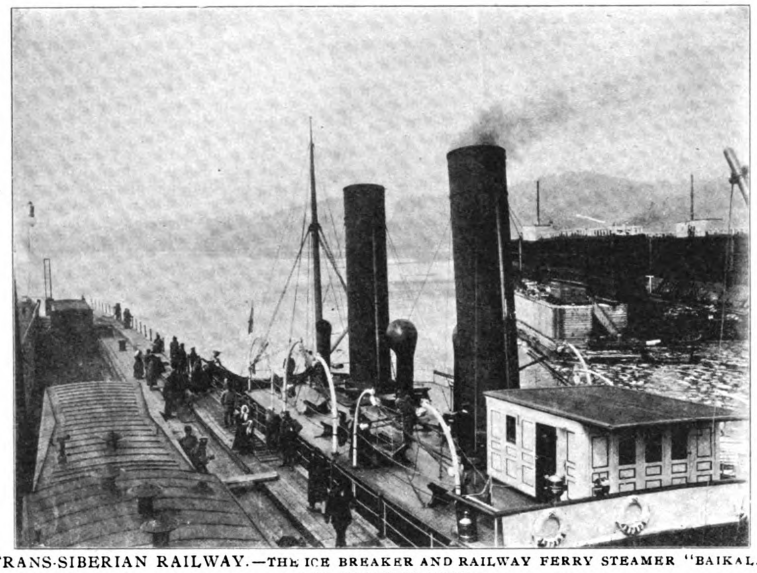
The outlook for the Chinese Eastern Railway as a profitable commercial venture is a dismal one. Heroic efforts on the part of the management cannot make trade unless they are seconded by the merchants and have a sympathetic market. The stimulus given to the bean trade in Manchuria by the opening of foreign markets for this product, presents an opportunity the management is taking advantage of to divert the trade to Vladivostock. The through passenger traffic over the line is, however, rapidly increasing, as the Trans-Siberian route is becoming more popular each year as the "Short way to and from Europe." In fact many Americans from Manila are being attracted to the Siberian trip, as the quickest way to reach the Atlantic coast ports. The comforts of the through Express and the excellence of the service, added to the economy in cost, and time, are having the natural result of popularizing the route amongst all classes of travellers.

The building of the proposed Chinchowfu Tsitsihar line, in addition to the competition of the South Manchuria service will divert some of this through traffic from Vladivostock, but the Chinese Eastern will still secure their share of the trade, at their own terms. The construction of the future extension of the Kalgan line to Kiachta will seriously menace the passenger traffic on this road and even then the Russian Government who owns the road will continue to dominate the situation and impose rates to counterbalance the loss to the Eastern section of her Trans-Siberian system. The traveller will benefit by the reduction in time, but it is hardly probable that this will extend to a similar economy in cost. It has been rumoured that Russia is willing to sell the Chinese Eastern Road to China by the time the Amur line is completed, but the money must be raised in the country. The Russian valuation of the property at something like $85,000,000 gold, is of course excessive. If this figure was reduced to a reasonable basis of $40,000 gold per mile, the total of about $38,000,000 gold might be within the reach of the Chinese Government. In view of the immense importance of this line to China, to preserve intact her territory in the event of future hostilities between Russia and Japan and if there is any truth about the hoard of the Imperial Treasure within the Walls of the Forbidden City, it would seem that the Regent ought to gladly part with some of this unproductive wealth to regain ascendancy over one of his richest provinces. Russia's purpose in reaching the sea at Vladivostock can be attained by the Amur line to which construction she is committed, and if she still harbors any designs on China's integrity, she can always slice off a province or two far from the interference of other Powers along the Mongolian and New Dominion frontiers. And when the Kiachta Kalgan Line is completed, the approach to Pekin is also opened to her. The Amur Line will serve as a military line to the Primorsk within her own boundaries, and for all commercial business the Chinese Eastern Railway will remain as a short cut across. The latter road in the hands of the Chinese would be of no value, unless Russia consents to interchange of traffic over the Ussuri and Trans-Baikal sections. The construction of the Chinchow Tsitsihar line and the repurchase of the road from Russia, would restore China to full control of her provinces and act as a preventive against any rupture between Japan and her late antagonist, taking place on Chinese soil

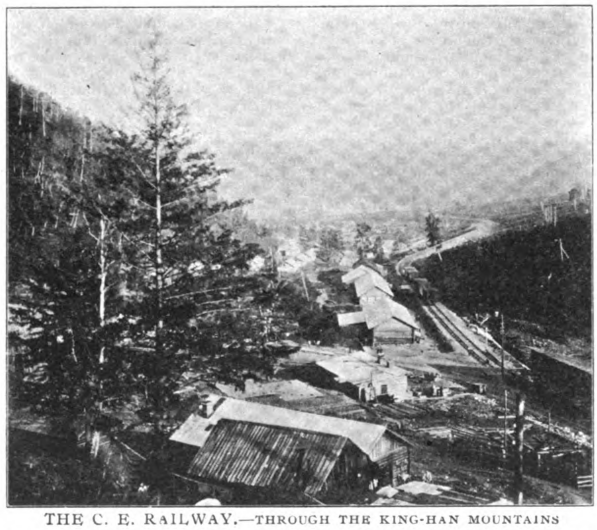
C. E. RY. BRIDGE OVER THE SUNGARI AT HARBIN

SOUTH MANCHURIA RAILWAY—THIELING STATION

KWANGTCHULIN STATION BETWEEN HARBIN AND KWANGCHINGTZE



TRANS-SIBERIAN RAILWAY.—THE ICE BREAKER AND RAILWAY FERRY STEAMER "BAIKAL." AND FLOATING DOCK



THE C. E. RAILWAY.—THROUGH THE KING-HAN MOUNTAINS

CHINCHOWFU-TSITSIHAR RAILWAY

The preliminary steps have already been taken by China to encompass her agreement with Japan and reach her northern frontiers by a railroad of her own, which will be so far outside the restricting provisions of the Peking Agreement that Japan can have no just cause for protest, from a commercial viewpoint, as being detrimental to the interests of the South Manchuria Railway. As in the case of the defunct Fakumen imbroglio, China, feeling her own weakness to carry her point, is reported as having entered into negotiations with a group of British and American capitalists to finance and construct an extension of the Imperial Railways of North China, from Chinchowfu northwards through Eastern Mongolia to Tsitsihar, the capital of Heilingkiang Province. Here surveys have been made for the Tsistsihar-Aigun line. This project when carried out will complete China's proposed Northern Trunk Line, place Peking into direct communication with her most northern frontiers, and in connection with the country to be served by the Amur Railroad. China is apparently determined to carry her point in regard to this road, and it is difficult to see what reasonable objections Japan can interpose. Commercially the South Manchuria and the Eastern Mongolian Line would hardly compete, as the country served could readily be made to support two or three lines, especially if the bean trade continues to increase in volume as it has the last two years.

Politically or strategically such a road would still be a menace to Japan's position in Manchuria, and in the event of future hostilities with Russia, or even with China, would materially weaken her position. The possibility of another struggle between Japan and Russia is always present, for Russia has signified to the world her future intentions by the building of the Amur Railway. Japan's answer is the ultimatum to China, in regard to the Antung-Mukden line, and forcing a new concession from China, for the Kirin-Hunchun Line. It is difficult to view the railway struggle in Manchuria from any viewpoint other than political.

With all existing Manchurian lines in the possession of Japan or Russia, China's right to build her own line to the extreme northern end of the province, is incontestable, as only by such a road under her own control could she hope to maintain neutrality in the event of a future conflict. There is no good reason why the scene of a future conflict between Russia and Japan should be in Chinese territory, unless the possession of that territory is aimed for as a result of the struggle. With the integrity of China insured by all the leading powers of the world, the construction of a purely Chinese trunk line through the disputed territory, is a strong factor for peace, and provides the only means for foreign powers to effectively come to China's aid, in the event of any infraction of this doctrine. With the proclaimed neutrality of China in such a conflict, the operations would have to be confined to the Maritime Province of Eastern Siberia, and the only effective means of safeguarding neutrality is by the construction of the Chinchowfu-Tsitsihar-Aigun Trunk Line.

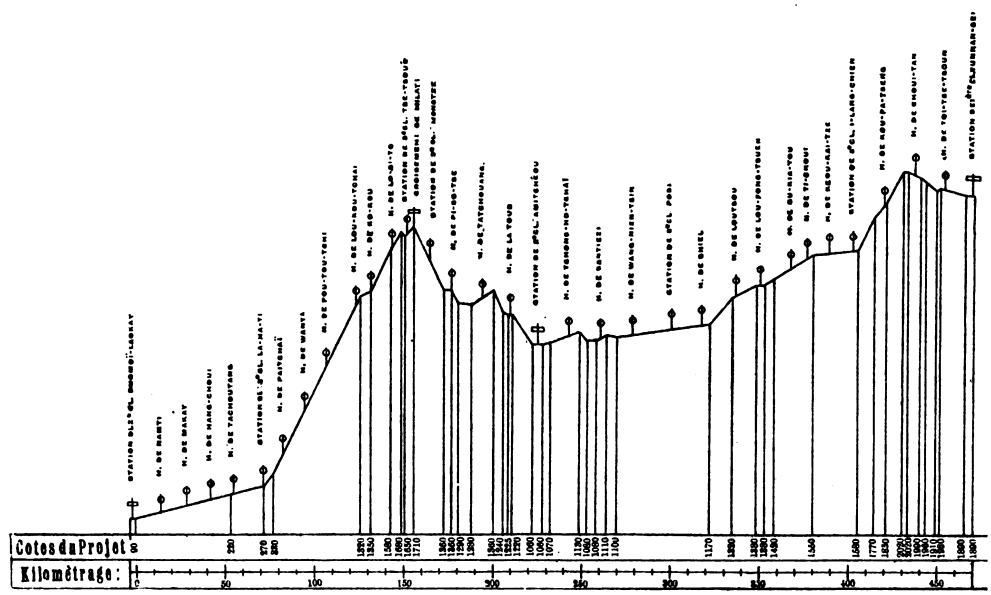
It would be folly for China in her present defenseless position to undertake such a serious enterprise, but with British and American capital to carry out the scheme, China effectively safeguards her interests and checkmates any designs on her territory.

The negotiations for the construction of the Chinchowfu-Tsitsihar Line have already called forth a notification from Japan that while she does not intend to oppose China's action, she will maintain her own rights under the recent China-Japanese Treaty. It is also reported that Russia has declared that if China persists in building the road with British and American capital, she may demand as compensatory advantages the right to the concession of the Kiachta-Kalgan Railway across Central Mongolia.

Recent reports from Peking are to the effect that the Board of Communications has already ordered the survey of the Kalgan extension across Mongolia to Kiachta, prompted by the Russian efforts to persuade China to permit her to build the line.

Interesting developments are sure to follow, and if Japan feels that her position is threatened by the Chinchowfu-Tsitsihar Line, or Russia seizes the opportunity to demand compensatory advantages, China will have only added to her troubles, and may precipitate another crisis in her affairs, into which Britain and America will be drawn. The Manchurian situation will then be definitely settled one way or the other for the infinite relief to all parties concerned.

THE YUNNAN RAILWAY



[(*From Trade Report of the Imperial Maritime Customs*)

PROFILE OF THE COUNTRY BETWEEN YUN-NAN-FU AND LAOKAY

France conquered Tonking with the fixed idea of gaining ready commercial access to China throughout Yunnan province. This hope remained but a dream for years, but it is now an accomplished fact, despite short sighted fears and British rivalry in railway construction.

When the French railway from Tonkin to Yunnan was taken in hand, the British in Burma sought to offset it by starting a rival line from there into the province to secure commercial and political influence in South China. But the British line stopped short at the Yunnan frontier, and the French line held the field and has been completed as far as Yunnan, the first objective point.

"On the 9th and 10th April, 1898, an exchange of despatches took place between M. DUBAIL, Chargé d'Affaires of the French Republic, and the Tsungli Yamen at Peking, embodying the following Agreement: the Chinese Government concedes to the French Government, or to the French company whom the latter may designate, the right to construct a railway from the Tonkin frontier to Yunan-fu, the capital of this province, the Chinese Government having no further obligation than to surrender the necessary land for the line and its dependencies. These conventions are to cement and strengthen the ties of friendship which unite France and China. The French Government thereupon designated, for the construction and exploitation of the line from Tonkin to Yun-nan-fu, the Compagnie Francaise des Chemins de Fer de l'Indo-Chine et du Yunnan, a company which had been started by the leading financial establishments of France, and this company, in its turn, entrusted the work to the Société de Construction des Chemins de Fer Indo-Chinois. The alignment of the future railway was studied by the delegates of the French Government, and subsequently by the delegates of the Compagnie Francaise des Chemins de Fer de l'Indo-Chine et du Yunnan. The line starts from Hokow, on the border connecting there with the Tonkin line to Haiphong and its branches, and ends at Yun-nan-fu. The gauge of the line is 1 metre (3 feet 3 inches). Once the main line has been completed, and if the parties concerned deem it expedient, after an understanding has been arrived at, between the high provincial authorities on the one side and the French Minister and the Wai-wu Pu on the other, as to the mode of procedure, branch lines connecting with the main line may be constructed. According to the Agreement signed at Peking on the 29th October 1903 all engines (machinery), supplies (stores), and materials necessary for the construction and exploitation of the railway are to be exempt from Import Duty. The original survey resulted in a decision to follow the Red River as far as Hsin-hsien and then to continue along the valley of the Hsin-hsien River on to the Mengtsz plain; from here the line was to proceed by way of Lin-an, T'ung-hai and I-liang-hsien to Yun-nan-fu. A thorough study of this first plan revealed many technical difficulties, and, after full consideration, the company, in November 1902, submitted an alternative scheme, according to which the line leads from Hokow through the Nam-hsi Valley on to the Mengtsz plain, and thence by way of A-mi-chou to Yun-nan-fu. In January 1904 the French Government gave its sanction to this new *tracé*, and shortly afterwards work was started along the whole line. The total length of the line from Laokay to Yunnan is about 465 kilometers or 287 miles, and from Laokay to Haipheng 248 miles, a total distance from the sea to Yunnansen of 535 miles. The main engineering difficulty was the 1600 meter ascent from the level of the Red River to the plateau, and the cutting of a bed along the almost vertical walls of the Namti River valley.

Before the French Government finally sanctioned the new tracé, a commission of mining engineers was sent into the province to study the question as to how far the altered project would affect the facilities for the transport of the output of the mines which, at one time or another, would be exploited; the result of their examination showed that no difference was apparent, the one project being as favorable as the other for the conveyance of the mineral products. Manifold and varied have been the difficulties of the company, and among these, notably, the scarcity of labor which prevailed at the outset along the entire line, and in addition, the unhealthy climate in the lower region of the Nam-hsi Valley. There are nearly 140 tunnels, the longest of which is about 600 metres; a large number of viaducts, bridges, and galleries have also been constructed.

The hardest task of all was that of laying the rails up the valley of the Nam-ti River, a fever stricken tract with a climate so deadly that the country is almost without inhabitants. This fatal valley has swallowed up millions of treasure, and multitudes of human lives. The number of coolies who perished there in laying down the rails, is set at forty thousand.

The people on the table-land have a deadly fear of this valley. Neither reward nor high pay can tempt them to set foot there. Labourers had to be recruited from distant parts. Coolies from North China could not stand this valley of death. Only Canton Chinese and low country Tonkinese could be found to brave the climate.

The superintending staff—almost all of them Italians—stood the climate well and made high profits—estimated so far at 30 millions of francs. Very few Frenchmen are employed on the line.

Leaving the inhabited section of Tonkin at Yen-be, the line runs to Mongtse over a distance of 300 kilometers (160 miles) through a country which is a wilderness and will ever remain so—being unhealthy and barren.

The original estimate for the cost of the line was Francs 101,000,000. A construction company was organized with a capital of 12,500,000 francs and received a government guarantee of 3,000,000 francs for 75 years, which produced a capital of 76,000,000 francs. The Tongking Government subscribed the balance of 12,500,000 francs to meet the required capital estimate.

The enormous expense of building the line through the Namti Valley, and the unusual amount of cutting and tunnelling ate up all the original funds of the concessionaire company, which collapsed last year for lack of money. For awhile French opinion endeavored to shift the responsibility of this excessive cost on to the shoulders of the Chinese Government, alleging that the stoppage of work was due to the desertion of the Chinese laborers from fear of the revolutionary bands and that when the laborers had quit, the engineers were also

forced to suspend. But the truth soon came out, as the matter was taken up in the French Chamber of Deputies, and a resolution offered providing for the supply of sufficient funds to complete the work. In January of this year the French Foreign Affairs Committee presented its report upon the bill authorizing the government of French Indo-China to raise a loan of $10,317,000 gold in order to meet the expenditure charged to the budget of that dependency in connection with the construction of the Yunnan Railway. In consequence of the financial and other vicissitudes of the enterprise since the concession for building the railway was granted by China eleven years ago, and various alterations in the plans, the initial cost of the work will amount to $32,216,000, as compared with the original estimate of $18,687,000. Of this increase in the estimated cost a sum of $10,025,000 is to be borne by the colony and the remainder by the company to which the concession has been assigned. The hope was expressed that work would be superintended with greater care in the future in order that the recurrence of costly errors be avoided. The constructors reached Mengtsze last April and with the opening of this section it became possible to conduct traffic over a considerable portion of the line. The line has since reached Yunnan-sen.

The loan for $10,317,000 (Fcs.53,000,000) is guaranteed by the State, bears interest at 4%, and is redeemable in 65 years. To this annual charge of $412,680 gold (Fcs.2,120,000) must be added the interest on the bonds amounting to francs 10,488,962, which were issued by the concessionary company and are equally guaranteed by the Colony and the States, is francs 506,306. Thus the total charge will not be more than about francs 2,630,000 ($526,000 gold).

"It is very unlikely," according to the report of the Budget Committee of the Paris Chamber, "that the State will be called upon to make good its guarantee. Though Indo-China is not yet out of a social and political crisis, the Committee considers that a wise administration will successfully achieve this, and expresses every confidence in M. Klobukowski without dissimulating the difficulty of his task. They report with satisfaction that from the financial point of view the position of the colony has again become healthy and even good. The figures for 1907 show a surplus of $4,179,000, and those for 1908 a surplus which will very probably exceed $3,500,000. Beyond this, the Tonkinese section of the Haiphong-Yunnan line has already entered upon a dividend-paying era, contributing f.400,000 to the colony in 1908. It is therefore clear that the new loan charges authorized are far from surpassing the financial abilities of Indo-China."

According to optimistic French reports "the commercial outlook of the Yunnan Railway is very bright. The traffic in European goods on the opened sections of the line is increasing every year. It only needs reasonable charges for the railway to draw to itself all the trade between Yunnan and the Tonkin coast.

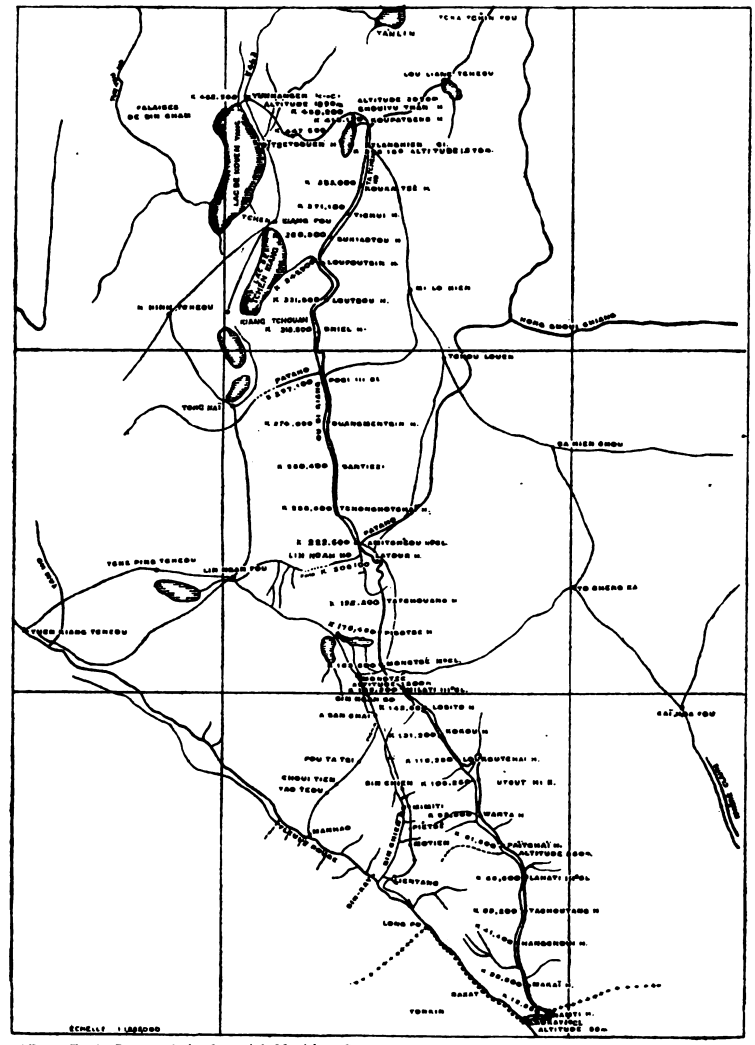
"The trade of Yunnan consists mainly in trafficking opium and tin for European articles—chiefly cotton goods. The tin export amounted, in 1907, to 48,710 piculs, against 45,146 piculs, in 1906. The tin is shipped to Hongkong, where it finds ready sale.

"Of the exports from the province, tin forms 81 per cent., opium 18 per cent., and smaller products one per cent.

"Exploration and research show clearly the value of Yunnan for trade purposes. It has a fruitful soil, and a healthy climate. Rice produces three crops a year. Sago and maize are grown where rice is unsuitable. Iron, silver, copper, tin, zinc, coal and gold are found in large quantities.

"The Yunnanese are a peaceful and industrious people, and number over eleven millions, but they are scattered thinly over a vast area. The completion and extension of the railway will, however, draw a flow of immigration from the valley of the Yangtsze River thither."

But there are others who maintain that the line will never pay unless it is extended on northwards to Szechuen Province with its 50,000,000 inhabitants, thus making Haiphong, which is 300 miles nearer than Shanghai, the port for this rich territory. Most business men in Tonkin frankly admit that if the line stops at Yunnansen its upkeep will be a very heavy burden indeed—even though the French Government shoulders it all. The outloook is the more serious from there being not the least chance of the Chinese Government buying up the railway, of which there was once a prospect.



(From Trade Report of the Imperial Maritime Customs)

MAP OF THE COUNTRY BETWEEN YUNNAN-FU AND LAOKAY ON THE CHINA-TONKIN BORDER, SHOWING ROUTE OF THE YUNNAN RAILWAY

The attitude of the Chinese Government against further extensions of a political line practically destroys any hope of its prolongation northwards, except under the condition that France surrenders her exclusive rights, and permits the line to be controlled and operated by China. China has the whiphand, and unless force is applied, there is little hope of the railway being a commercial success.

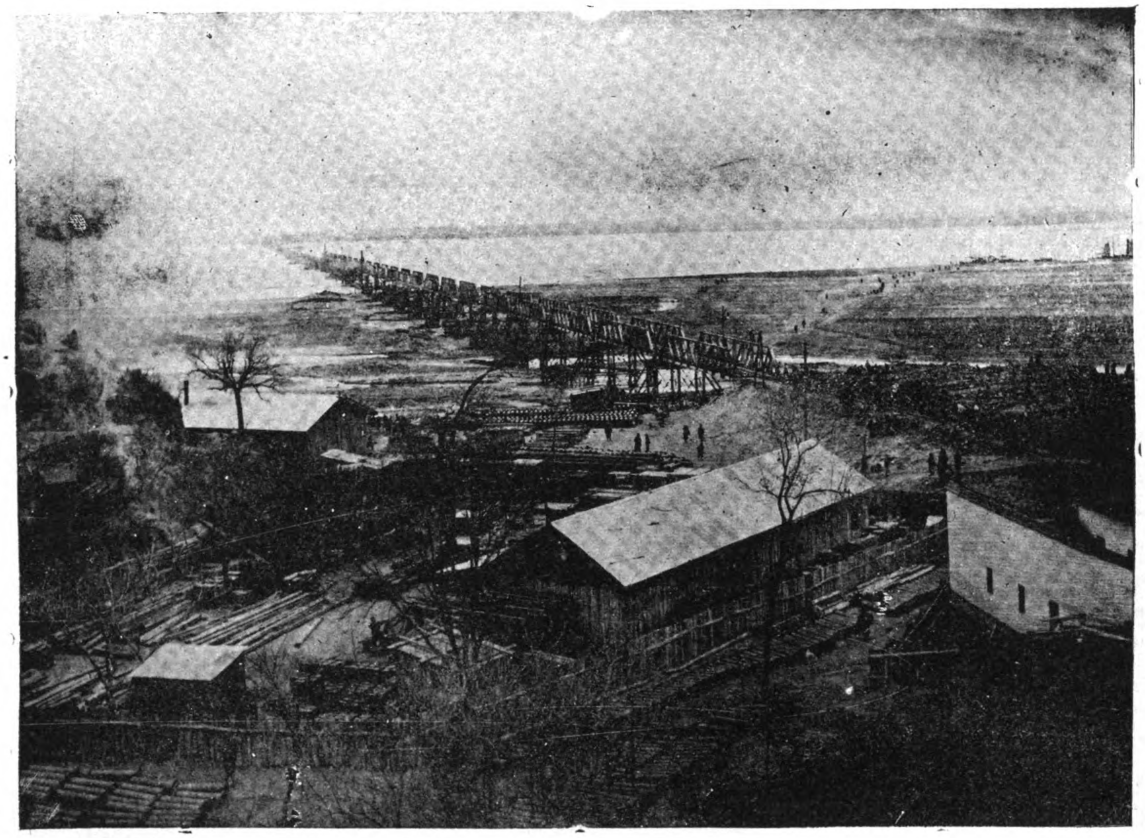
With the completion of the railway, vague reports are coming from Yunnan about the military activity on the part of France. A recent native report reads:—

"Lately the French have been sending officers to Yunnan and Kwangtung to make maps of the important strategical positions and smuggling arms and ammunition to all points along the Yunnan Tongking Railway. The Wai wu-pu has now requested the French Minister to instruct the French authorities in Indo-China to recall the military spies and remove the arms from the Chinese territory. The fact that the French are increasing their Army in Indo-China is rousing the greatest suspicions in the minds of the members of the Wai wu-pu as to their object and they are negotiating with the French Minister for a definite agreement that neither China nor France shall station troops along the Yunnan-Tongking Railway and that the Chinese section shall be guarded by the Chinese police only. The Board has at the same time wired the Viceroy of Yunnan to train the soldiers in his province in case of emergency."

So here again are laid the seeds for future trouble to China over a commercial concession originally given up to cement the ties of friendship with France.

Here we have a meter gauge road 535 miles long, from Yunnan to the sea, with enormous engineering and labor difficulties to overcome built at a cost of $32,216,000 or an average cost of something over $60,000 per mile. Aside from the labor troubles, the road compares in a way with the Chinese Standard gauge Kalgan line, rising 2200 feet in less than 100 miles, built at a cost of $50,000 per mile. Of course this is only a general comparison, but the figures assist in arriving at an appreciation of the Chinese ambition to do their own work, free from foreign interference.

IMPERIAL PEKING-HANKOW RAILWAY



PEKING-HANKOW LINE.—THE YELLOW RIVER BRIDGE

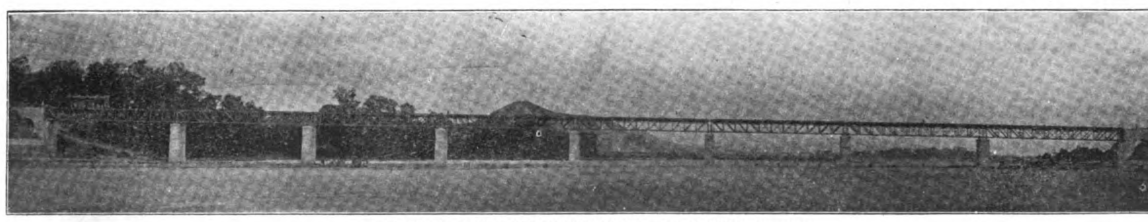
Of all the enterprises in China in which Belgian capital has taken a share, the most important is the Peking-Hankow Railroad.

This line is 1,200 kilometers long and constitutes, with its future extension from Hankow to Canton, the Great Central Railway of China, which will one day form the trunk line of all the other railroads of Central China, and which will link the Gulf of Pechili with the Gulf of Tong-King—2,500 kilometers—passing through Hankow, the largest port of the Yangtsze Blue River, which is situated at the junction of this waterway and the Han River.

The Hankow-Wuchang-Hanyang agglomeration—the knot of the entire Chinese system of railroads—had formerly 6,000,000 inhabitants, but there remain now no more than 2,000,000 since the terrible Taiping Rebellion which desolated this region. Owing to her unique location on one of the finest rivers of the world, in the center of a valley with a population of 100,000,000 people, nothing, however, should prevent Hankow from returning to her ancient importance as a trade center. The same may be said of other cities as railroads replace the almost extinct imperial highways and the obstructed canals.

In 1889, Chang-Chih-Tung, then Governor of Canton, formulated a clear project in a report to the emperor at Peking. His proposals were considered as most valuable and an imperial decree sent Chang to the viceroyalty of the Two Hus of which the capital (Wuchang) and Hankow face each other on opposite sides of the Yangtsze. His special mission was to preside over the construction of the southern portion of the Peking-Hankow line, while Li-Hung-Chang, the Viceroy of the Province of Pechili, was looking after the final construction of the road in its northern portion. Chang-Chih-Tung must have on this occasion felt very keenly the great difference there is between the completion of a colossal undertaking and its execution. Years passed by, and the clever viceroy saw no possibility whatever of how to carry out his stupendous project. He knew well that the creation of such a railroad had, besides its economic conclusions, a very great political complexion. He knew that if China wished to prevent foreigners from possessing a new and dangerous weapon, she must construct her future railroad absolutely with her own resources. But to do this money was necessary, and it was impossible to obtain money in China.

About the end of 1896, Chang-Chih-Tung and Li-Hung-Chang caused the Tsung-li-Yamen to understand that the latter had much miscalculated the resources of China when it proposed that this national enterprise should be carried out without the help of foreign money. The two promoters of the project received authority to grant the concession to a company of the "most favored country." The only hope of carrying out the scheme was to secure the assistance of foreign enterprise. Several com-



PEKING-HANKOW RAILWAY.—240-METER BRIDGE

panies were organized and submitted proposals, and finally these simmered down to the consideration of a proposal from a group of American financiers, one from British capitalists, and another from the Belgian Syndicate. At this time Taotai Sheng Kung Po was director-general, having been placed in charge by Imperial edict, in 1896, of the projected line.

When an American Syndicate represented by Senator Washburne sent out a survey party under the direction of Captain Rich, it looked as though the concession would go to America. This party, starting in 1897, completed its work the following year and submitted maps and estimates of cost. H. E. K. S. Low, now managing director of the Tientsin-Pukow Railway, was a member of this survey party. With the conclusion of the survey and the presentation of the plans and estimates negotiations were resumed with the American group.

It might be said here that the American group was actuated in securing the concession on purely business grounds, free from any political designs on Chinese territory, and held out for terms which the Chinese were not willing to grant. While the negotiations were hanging fire, a Belgian Syndicate appeared in the field and proposed to accept the concession along lines which the American Group was not ready to accede to. The result was that the Chinese closed with the Belgians.

It is not my purpose to enter into any of the intricate political questions involved in this concession. These have been fully treated in an excellent work on "Railway Enterprise in China," by Mr. Percy Horace Kent, a book that everybody interested in Chinese Railways should read carefully.

The American interest lost out to the Belgians through ignorance of China and things Chinese. The former were bent on securing all their rights preliminary to the agreement, the latter accepted the Chinese view of what ought to be, signed the agreement, and then arbitrated the differences afterward. Sheng King Pao in his memorial to the Throne said that the American terms were "too hard."

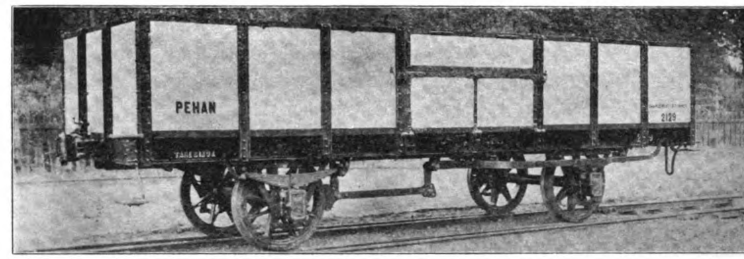
He then turned towards Belgium, "a very wealthy, small country, whose power is negligible," as they said in their report of December 1897. They chose this country, guided by the above political considerations.

On another side, while the negotiations were taking place, M. Gérard, minister for France at Peking, thought the moment had come to remind the Tsung-li-Yamen about Article 7 of the Franco-Chinese Treaty of June 9, 1885, which stipulates that "in the construction of railroads, China will use all her influence to attract French industry." The political power of France was, for the Belgians, a precious auxiliary to protect, when necessary, their involved interest. The result was, therefore, a fusion of Belgian and French capital in one company.

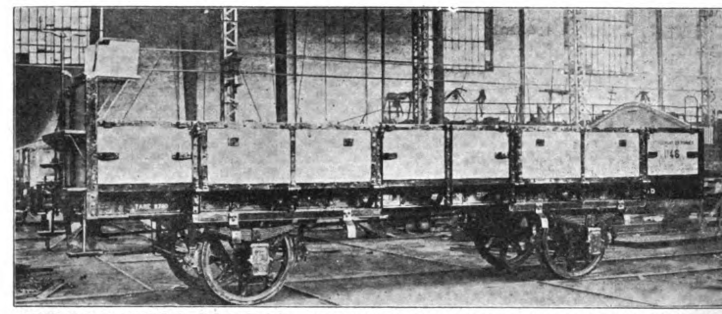
Since 1897, a preliminary contract had been signed between the Chinese Government and the Franco-Belgian Syndicate for the construction of the railroad, and on June 26th, 1898, despite a rather strong opposition from Great Britain, the Belgian minister at Peking, Mr. Joostens, obtained the definite concession of the road for the *Société d'etudes de chemins de fer en Chine*.

The Chinese say that the American and British proposals were too precise in regard to certain stipulations or appeared so to Chang Chih-Tung and Sheng Kung Pao, and especially so in view of the fact that the Belgian Syndicate were willing to meet every wish of the Chinese Government without question. The result was that the agreement between the Belgian Syndicate and the Chinese Government was signed in June 1897 by Sheng Kung Pao. The Syndicate soon found, however, that in order to financier the project in Europe, it would be necessary to secure improved terms from the Chinese government.

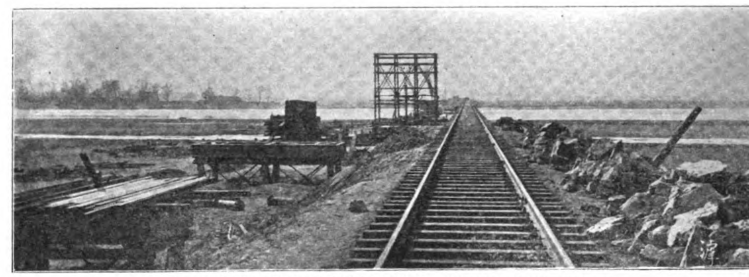
In this connection it might interest the readers to know the nature of the contract that linked the Tsung-li-Yamen to the Franco-Belgian Syndicate just mentioned. The Manchurian system of railroads had been built by a Russian company, and the German system by a German company. Both of these companies had been



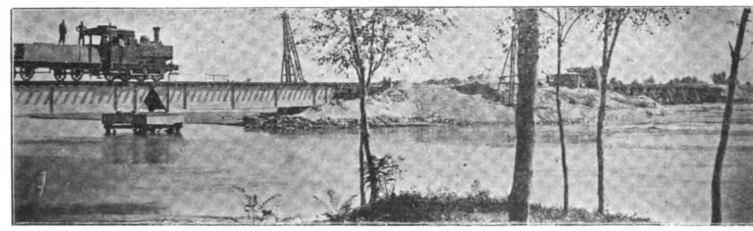
PEKING-HANKOW RAILWAY.—BELGIAN GOODS WAGON



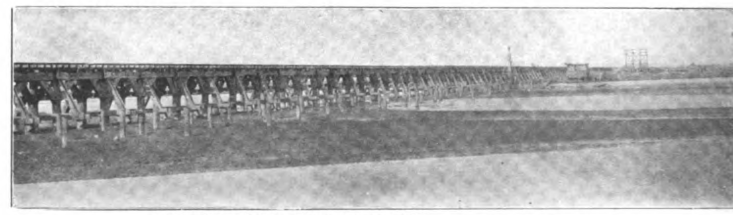
PEKING-HANKOW RAILWAY.—LOW SIDED CAR FROM BAUME MARPENT, BELGIUM



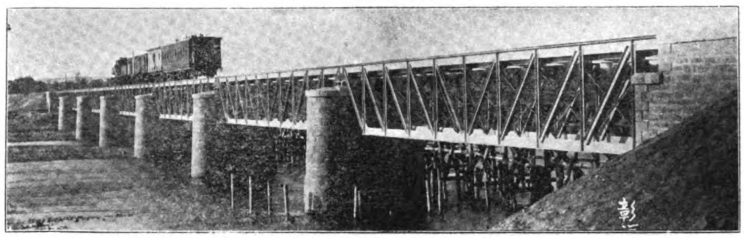
PEKING-HANKOW RAILWAY.—BRIDGE OVER TAO-HO



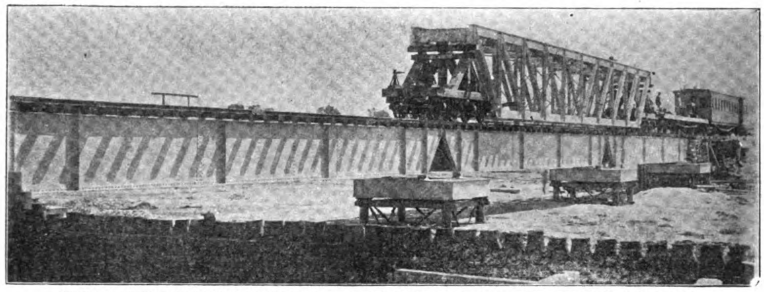
PEKING-HANKOW RAILWAY.—BRIDGE NO. 5 OVER THE SHA-HO



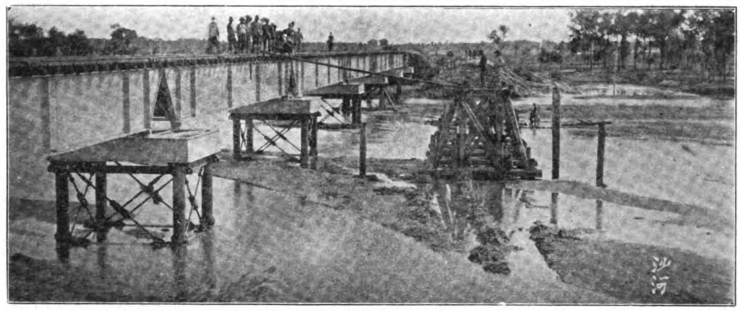
PEKING-HANKOW RAILWAY.—PU-TA-HO BRIDGE



PEKING-HANKOW RAILWAY.—BRIDGE OVER THE ICHANG-HO



PEKING-HANKOW RAILWAY.—CONSTRUCTING BRIDGE OVER THE SHA-HO



PEKING-HANKOW RAILWAY.—BRIDGE OVER THE SHA-HO

created at the risks and perils of the concessionaries, without any guarantee from the Chinese Government. It was altogether different with the concession granted to the Franco-Belgian Syndicate, which obtained not only the support of Chinese Imperial Company of Railroads, conducted by Chang Chih Tung, but also the official patronage of the Peking Government, which gave it financial support by working out the following combination:—

In order to facilitate the operations of the contracting company, China decided to issue a state loan. The specifications having been accepted and the amount to be spent approved by competent authority, the Chinese Government remitted to the syndicate bonds at 90 per cent sufficient to cover the expenditures decided upon. The syndicate had only to negotiate these bonds. The money obtained by this operation constituted the capital with which to build the road for the Peking Government, the contracting syndicate receiving as remuneration for its trouble 20 per cent of the net profits of its undertaking. Such was the ingenious mechanism which served as a basis for the convention concluded, in 1898, between the Chinese Imperial Company of Railroads and the syndicate. It presented this considerable advantage that the concessionaries had, in reality, not to trouble themselves about the formation of a construction capital; they had only to secure sufficient credit in order to convert into money their Chinese paper. It was thus that in March, 1899, a loan amounting nominally to 112,500,000 francs, called the 5 per cent Chinese Loan of 1898, was issued at the same time at Brussels and in Paris. The transaction seemed even then so brilliant that the loan, in Paris alone, was covered ten times over.

The loan was to be amortized within twenty years after 1909. The Chinese Government were given the right to repay the loan in or after 1907, thereby cancelling the agreement. The Imperial revenue and profits of the railway were made security for the loan and the financial arrangements were placed in charge of the Russo-Chinese Bank. In this connection, there is every reason to believe that French and Russian influence combined to the furtherance of the Belgian Syndicate's interests during these negotiations with the ultimate purpose of securing a link in the Peking-Hankow for a railway through the empire. A proposal was made by the China Association that the British Government should guarantee a loan covering the construction of the line in order to checkmate Russia and France. These efforts were of no avail. The Belgian Syndicate secured a working agreement covering a period of 40 years with full control of the line. When the loan was floated the fact that over three-fifths was subscribed in Paris confirmed the belief in the injection of Russian and French influence. And it was about this time that Russia renewed her efforts to secure a concession for a railway from Peking to some point on the Siberian line, but without success.

Surveys and Commencement of Construction.—While the negotiations were going on, Chang Chih-Tung had already had the first surveys and drawings made based on the report and estimate secured from the American Engineer, Capt. Rich. Previous to 1899 and before the Belgians took over the work of construction, the Imperial Railways of North China had surveyed the line south from Lukouchiao to Paotingfu under the direction of Mr. Kinder and Mr. T. J. Bourne in 1896, and the work practically completed. The road, for a short distance from Hankow, goes along the Yangtsze, then traverses the Hu-pei Plain. From Honan-Chau—at the 153d kilometer post—the line zigzags between steep hills forming scenery to be compared with the finest Japanese landscapes. After Sinyang, it traverses another charming plain, a little before reaching the Hwang-ho (Yellow River), where is erected on the summit of a hill a temple consecrated to the divinity of the river.

Work was begun in 1899, simultaneously on the Peking terminus and on that of Hankow. It was very actively carried on under the direction of the efficient Belgian engineer, M. Jean Jadot, as chief engineer of the Pei-Han. It was necessary to build a great number of bridges, some of which reach a height of 420 meters.

Great Yellow River Bridge.—At the beginning of December, 1904, on the Hankow side, rails were laid up to the Hwang-Ho River—500 kilometers. Across this waterway the gigantic Hwang-Ho River bridge has been constructed. This structure is 3010 metres long. The construction of this bridge was a unique feat in engineering and one on which the eyes of the engineering world was earnestly fixed. It is about 6.25 meters above high-water level, and is of steel throughout, the massive girders being supported on sets of screw-driven tubular piles. The steel piles were screwed into the bed of the river by means of hand capstans manned by squads of coolies. In fact all bridges are of steel and like construction, while the approaches and other masonry work are of concrete. The bottom end of each pile has a tooth point with a large inclined blade above it, not unlike the tip of a corkscrew. To each point was clamped an enormous grooved pulley, around which was wound a wire hawser. One end was led to one of the capstans, and then the coolies heaved away and the work of screwing began. The rotary motion of the piles, with the corkscrew blade, naturally screwed the pile down into the mud till the pulley was level with the platform on which the workmen were standing. When the pulley reached this platform, another length of pile was bolted together, the pulley raised to the upper flanges, and the screwing resumed. When the piles had been screwed to a sufficient depth, say 12 to 15 meters, the water was pumped out from the interior. The pile was then filled with concrete. Wooden piles were then driven around the current side of the piers in the shape of a triangle, with the points to the current, as a protection to the structure. Huge beds of tree branches, lashed together with wire, were then sunk around the steel piers, and on these beds hundreds and hundreds of tons of rock were thrown. This was reckoned to give more solidity to the river bed where the piers were driven, and possibly prevent the river washing away the foundations, if such the shifting bed of the river can be called. The steel piles were placed in sets of four, six, eight, and ten, and each pile is joined by stanchions and girders of great strength, and finally each set of piles is spanned by an enormous girder on which the rails are laid. Half of this bridge was built in France, the other half in Belgium.

The river bed is one gigantic quicksand and during the construction of the bridge many piles were sucked under as well as platforms supporting machinery. Breakwaters of stone have been built along the banks of the river to prevent the undermining of the bridge foundations, and either end of the structure is protected with stone-faced dykes to prevent the water washing away the dykes.

The Governor of Honan recently called attention to the state of this bridge. It seems that the stream is undermining the pillars supporting the bridge and the safety of the structure is threatened. Aside from this the bridge is said to be altering the current, so that serious trouble may be looked for. Two officials were sent from Peking to make a thorough inspection and carry out such relief measures as they may deem advisable.

The construction of the Peking section of the line went on apace with that of the southern section, and the conjunction was formed at the Hwang-Ho River bridge.

PEKING-HANKOW RAILWAY.—PEKING STATION

Roadbed, Tracks, Gauge and Rolling Stock.—The roadbed is well-built and solidly ballasted, over which the most powerful locomotives may run at full pressure. The gauge is the same as that prevailing in Belgium, and the rails were all submitted to a most severe test at Hanyang where they were mostly manufactured. These tests were those enforced by the Belgian Government for its railways. The weight of the rails is 37.6 kilograms per meter. The rolling stock is modern and plentiful, and some of the trains which run through from Peking to Hankow and *vice versa* are equal in appointment and speed to many similar trains on European lines. There are three classes for passengers, the cars for the 3d-class being open. The fare is about 3 cents. The rates for 1st and 2d-class are about 9 and 6 cents per kilometer.

During 1906 the net return per kilometer (0.62 of a mile) over the entire line was $2,065, United States currency. The gross receipts during 1906 were (converted on the basis of Mexican peso at $0.52) $3,945,760, of which $1,378,680 was from passengers, $2,489,080 from freight, and $78,000 from freight (service). The operating expenses were $1,320,280, leaving net receipts of $2,625,480. The interest on the loan at 5 per cent amounted to $1,136,720, the interest on Chinese loan and bonus to $270,400, leaving a gross profit of $1,218,360. From this was deducted $121,836, as 10 per cent for reserve fund, and a net profit of $1,096,524 remained. This makes the coefficient of exploitation 30.68 per cent.

The percentage of expense in the central administration was 11.39; exploitation and operation, 19.57; traction and materials, 46.38, which was high owing to cost of coal; tracks and works, 22.66. The number of 1 ton (2,204 pounds) kilometers was 266,329,358; average run of 1 ton, 150; average return of 1 ton, $1.40; average return of 1 ton per kilometer, $0.0092.

The net profits of the line in 1907 amounted to about $2,000,000, and these handsome returns decided the Chinese Government on exercising its right to repurchase the road according to the provisions of the agreement. The Concessionaires were entitled to 20% of the net profits of the undertaking during the currency of the loan, but the Chinese Government was entitled to redeem the loan in September, 1907, and annul the agreement with all further participation on the part of the concessionaires in the profits. The situation was forced on the Chinese Government as a purely business proposition considering the great future value and profits of the line. It was better to pay, say £225,000, being 5% on the loan of £4,500,000, than to pay 20% of the annual profits to the Belgian Syndicate.

In view of the criticisms directed against H. E. Sheng Kung-Pao for the awarding of the concession, the provision which gave the Chinese Government the right of redeeming the line prior to the commencement of amortization in 1909 reflects great credit for shrewd foresight.

"The line was constructed as cheaply as possible, and this was done deliberately with the intention of making it possible to earn dividends as soon as its construction was completed," says the *Shanghai Times*. "This was considered a wiser plan than to spend so much on the construction of the line that it would be impossible for it to pay dividends.

"Careful estimates state that, after allowance for the charges of running expenses and interest, the line will repay the cost of its construction within fifteen years. During this time, the roadbed can be improved, better station houses built, and more comfort provided for passengers."

Negotiations were entered into with the Belgian Syndicate with a view to issuing a new loan to redeem the old one, secure absolute possession of the line to the Chinese authorities and eliminate the payment of the great percentage of profit. These negotiations were successful and on Jan. 1st, 1909, the management of the Pei-Han line was taken over by the Chinese authorities at Peking.

The capital of the Peking Government for the line between Lukaochiao and Paotingfu is Taels, 5,620,000 and the loan from Belgium is Francs 125,000,000 and the loan to redeem it Francs 50,710,000. The Revenue for the year 1908 was about $9,970,000. The expenditure for running the trains $3,620,000; for the works about $880,000 and $175,000. the price of rolling stock paid out of the original loan now paid back. The interest paid out is about $2,824,000 and also the sum of about $408,000 paid to the Board of Finance as interest on the capital for Lukaochiao and Paotingfu line. The profit made in 1908 is about $3,117,000 but after deducting the twenty per cent interest to the Belgian syndicate and also the reserve fund there remains the sum of $2,244,000 as net profit.

The Chinese Government promised the Belgian Syndicate an extra bonus as soon as the accounts of the Peking-Hankow Railway were audited by a commission consisting of the representatives of the Chinese Government and the Belgian Syndicate.

A special bonus of $141,000 has recently been paid over to the Syndicate out of the profit account. On the payment of that bonus, Belgium's connection with the Peking-Hankow Railway ceased entirely.

The president of the Board of Posts and Communications has reported that to develop the railways would require the sum of Tls. 15,000,000 during the next three years over and above the net profits from the railways. The most important and largest item is that for the building of the four branch lines of the Peking-Hankow Railway (from Tingchow to Tanghsien, the North bank of the Huangho to Muhlan, Yencheng to Chou Chia Kow, and Matauchen to Wangkintien); and the construction of the line from Hwo Hsiang Chen to Yuchow will cost 3,600,000 taels, besides the money required for the new carriages, hotels and stations, and for acquiring and working coal mines. His Excellency Hsu, concludes that if the above things are to be done a foreign loan is absolutely necessary.

At about the same time the Board of Posts and Communications reported to the Throne that from Nov., 1907, to the end of the 34th year (Feb. 1909) the Peking-Hankow, Chengting-Taiyuen, Pein-loh, Taokow-Chinghwa, Shanghai-Nanking and Canton-Kowloon Railways have altogether cost £3,750,000 and Tls. 29,646,100 odd. The profits of the Peking-Fengtien and Peking-Hankow Railways and interest on the money deposited in the banks amounted to Tls. 11,705,000 and the sums of £3,760,000 and Tls. 18,250,000 odd were borrowed from the Board of Finance, the Ta Ching Bank, the Hongkong and Shanghai Banking Corporation, the Bank of Indo-China and the Bank of Communications. The balance in hand was therefore Tls. 308,900 odd which, however, has since been spent.

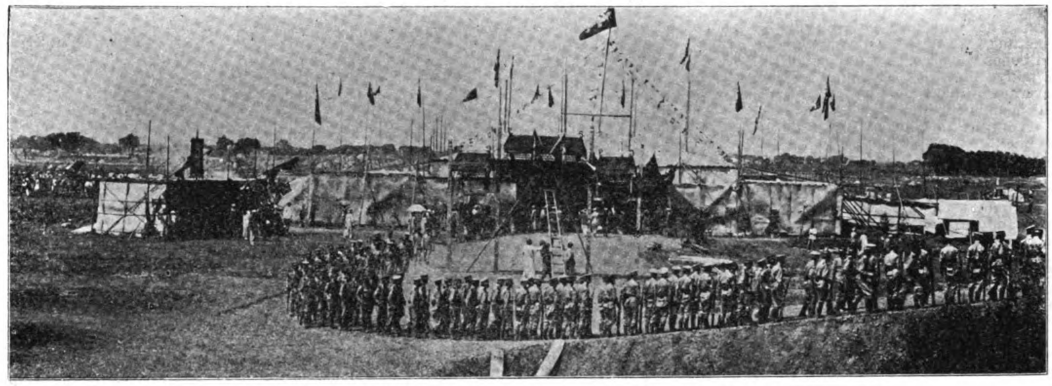
So if the proposed improvements are carried out further further loans are necessary.

THE SHENSI RAILWAY

Continuing on westwards from Tingkuan to the provincial capital of Shensi (Hsiangfu), it is proposed to construct a line with native capital. This province, however, has not taken kindly to railways and it may never be built if provincial funds are relied on for the enterprise. Much talk has been indulged in, some surveys made, and it is reported that two Japanese engineers have been engaged to superintend the work. However, the native investor don't know anything about railways, and like his brothers in other parts of the Empire entertains a reluctance to hazard money in enterprises under official control. The officials propose to build a trial short line in the province to see how a railway works and will employ horses and mules for awhile, instead of steam, until the Peinlo Road is brought up to Tungkwan. Any old towns will do to connect up and set things moving but strange to relate the native investor is still shy about placing money in a scheme of such doubtful advantage. But this transition stage can only last a short time, as the Central authorities at Peking are keenly alive to the importance of the scheme to link Hsianfu up with the Peihan Railway and bring it into closer touch with the capital, and if the province will not come to time, a foreign loan will sooner or later be floated or the road built from the profits of some working government line.

IMPERIAL CHINESE TIENTSIN-PUKOW RAILWAY

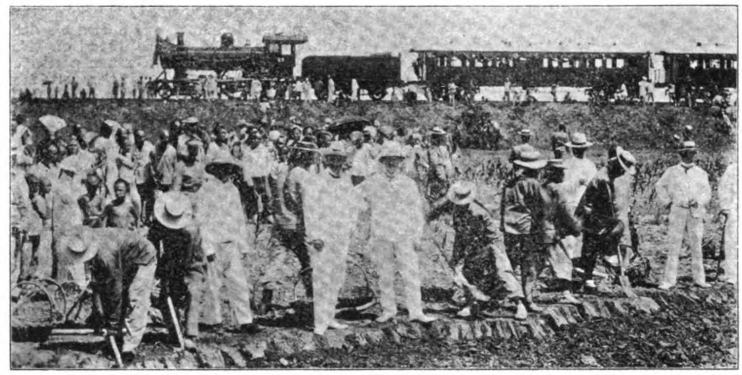
NORTHERN SECTION



TIENTSIN-PUKOW RAILWAY. (NORTHERN SECTION).—OFFICIAL OPENING CEREMONIES

The original concession for this railway, from Tientsin to Chinkiang, was granted in 1897 to a Chinese by the name of Yung Wing with permission to enlist the aid of foreign capital. Yung entered into negotiations with British and American capitalists for a loan, but the occupation of Kiaochao by the Germans, together with the special railway privileges in Shantung ceded to them by China, effectively blocked further hope of connecting Tientsin with the Yangtze through Shantung, without German participation. The contract entered into by Yung Wing for a loan of $27,500,000 gold was therefore cancelled, as there was no way of getting around the German preferential rights in Shantung, or of altering the route to avoid passing through that province.

In 1898 Germany and Great Britain arrived at a satisfactory agreement in regard to their railway policy in China, the former agreeing to confine activities to the Hoang Ho valley, and Great Britain to the Yangtze, and at the same time a working arrangement was formulated for the financing and construction of the Tientsin Yangtze trunk line, in which Germany would share to the extent of such part of the line as traversed her sphere of influence, and



TIENTSIN-PUKOW RAILWAY.—NORTHERN SECTION

Great Britain would take up that part from the southern boundary of Shantung to the terminus at Chinkiang. Owing however to the Shanghai-Nanking Railway project which later assumed definite form, the southern terminus at Chinkiang was altered to a point opposite Nanking on the Yangtze called Pukow, an old deserted walled town of no importance, except its proximity to the southern capital and as connecting the two systems more effectively than at Chinkiang lower down the river and the proposed terminus of the Pukow-Singyang road connecting the Eastern Yangtze systems with the Peihan trunk line. The preliminary negotiations for the concession were finally completed in May 1899, in which the Deutsch-Asiatische Bank representing the German interests was to finance, construct, equip and operate the northern section of the road from Tientsin to the Southern Shantung border, for and on behalf of the Imperial Chinese Government, and the British and Chinese Corporation acting for British interests was to take up the Southern Section on identical terms. The Boxer troubles suspended further progress and it was not until June 1902 that negotiations were again resumed with China for the conclusion of the final agreement, and in January 1908, that this document was formally signed and sealed.

The Loan Agreement was for £5,000,000 at 5%, for a term of 30 years, amortization to commence in ten years in half yearly installments, the Chinese government reserving the right to redeem the loan any time after ten years by the payment of a premium of 2½% or £102.10s. on every £100 bond.

The loan was secured on the lekin and internal provincial revenues of Chihli, 1,200,000 Haikwan Taels per year, of Shantung, 1,600,000

Haikwan Taels per year, and by the Nanking Lekin of 900,000 Taels and the Huai-an Native Customs in Kiangsu of 100,000 Taels per year.

The loan was to be issued in two installments the first of £3,000,000 placed on the market in March 1908, at 98¾. The issue was subscribed for four times over, and a considerable portion was subscribed for by Chinese in Pekin and Tientsin. The provincial government of Chihli, Shantung, Kiangsu and Anhui hold £260,000 in bonds exclusive of those purchased by private native investors. The price to the Chinese Government under the Loan Agreement for the 1st installment was 93% of the face value and on future installments the Chinese government was to receive the same rate as paid by the public less 5½ points commission to the financial syndicates.

The conditions of the loan agreement were distinctly favorable to China. The control of the funds and expenditures were confided to the managing director of the line, and a modern system of accounting provided for subject to inspection by a representative of the syndicate at any time, to verify the payments.

The construction and control of the railway was held in the hands of the Chinese government, and the British and German chief engineers were subordinated to the control of the Chinese managing director. The purchase of materials was also arranged for on a most favorable basis for China. In fact, the conditions surrounding the construction of this road, threw all necessary precautions and obstacles in the way of graft or extravagance, and with honest directors there was little leeway for abuse of authority or scandal in the management.

The Germans have taken the credit for establishing the precedent of these so called Pukow terms in dealing with China, while British financiers have held to the opinions that they fail to sufficiently safeguard the investor in a country where official honesty is viewed from a standpoint utterly opposed to Western ideas on the same subject.

Work on the northern section of the road under German supervision was officially commenced on June 30th 1908, when the Viceroy of Chihli and the managing director Lu hai-huan with elaborate ceremonies turned over the first sod at Hsi-ku, a suburb of Tientsin. H. E. Lu Hai-huan, one of the most respected officials of the Empire, was appointed director general of the two sections, and Taotai Li Te-shun (Alfred Li) was made managing director of the Northern Section, and Taotai K. S. Low, Director of the Southern end. Mr. Dortmuller, of the Technical staff of the German Shantung Railway, was appointed chief engineer of the German section, and Mr. T. W. T. Tuckey, who had 20 years' experience on the Imperial Railways of North China, was selected for the similar position on the British end.

Work on the northern end was vigorously prosecuted from the beginning. The managing director, Li Teh-Chin, was selected for his knowledge of German. A large tract of land was optioned for in the vicinity of the Tientsin city station of the I. R. N. C. for the terminal depot, yard warehouses and shops. Materials for the line were all purchased in Germany, and it is alleged that in some instances the goods were purchased and on the way before public tenders were invited in Tientsin.

It is difficult pending the result of investigations now being conducted at Tientsin to accurately gauge the many charges of corruption and fraud alleged to have been practiced under the tenure of office of Taotai Li Teh-Shun. It has been charged that he agreed for a financial consideration to change the terminus of the road to a place near the German settlement at Tientsin, and that coal contracts were placed at excessive rates to a colliery controlled by Germans, and that he acted in collusion with German friends in the purchase of lands, sharing the profits with them. Taotai Li is also charged with employing an undue number of German engineers and assistants at excessive salaries and expense. According to native reports, the result of an official investigation under the direction of H. E. Hsu Shih Chang, the President of the Board of Communications, disclosed peculations to the extent of Taels 3,500,000 during the tenure of office of Director Li. The situation is decidedly unpleasant for Germany, and a hard blow to the Pukow terms, she was so proud of. No accusation is made against German participation in this huge scandal, and they strenuously deny smallest ground for associating German officials with the charges of fraud in connection with Li's defalcations. The end of the disagreeable occurrence was the impeachment of Taotai Li, and in his fall he dragged down his superior H. E. Lu Hai-huan, against whom no breath of suspicion has been stirred. The Throne, however, held him responsible for his subordinate's misdeeds, and charged him with lack of proper supervision.

TIEN TSIN-PUKOW RAILWAY. (NORTHERN SECTION).—TURNING THE FIRST SOD.

It is admitted that the German chief engineer, held an equal position with the managing director in his control over the accountant, and all foreign employers, despite the provision of the loan that the director was solely responsible for the funds. This participation, however, ended here, for it could not extend to the actual disbursements, which were held exclusively by the director. The German official was powerless to actually disburse funds, so in the absence of collusion, the sole responsibility must be shouldered by the Chinese official. H. E. Hsu Shih Chang, president of the Railway Board and one of the really honest and capable officials of China, has been authorized by the Regent to take over the duties of the director general of the road in the place of H. E. Lu Hai-huan. H. E. Hsu fearing a repetition of scandals has commenced his duties by concentrating financial control of disbursements in his own hand, and hereafter the managing directors of the two sections are prohibited from paying out funds exceeding Taels 500 without special sanction from him. The action while one of precaution, is a severe reflection on the honesty and capacity of Taotai Low of the Southern Section, and places great difficulties in the effective dispatch of business. Work on the Northern Section, however, has been pushed ahead notwithstanding the official scandals at headquarters. The greatest engineering problem on this section is the bridging of the Yellow River above Tsinanfu, the provincial capital of Shantung, where conditions similar to the bridging of the same river for the Peihan Railway is encountered. The estimated cost of this bridge alone is Taels 2,000,000 Otherwise the country is level and there are few engineering difficulties of magnitude to contend with.

It is expected that the entire line will be open for traffic within three years. It will pass practically through the same region as that served by the Grand Canal. It is more than 600 years since the Grand Canal was completed by the Mongol Emperor, Kublai Khan, and rightly regarded as a work of great importance, providing as it did, an interior line of water communication between Hangchow and Peking. For centuries it served as the main artery of commerce between the north and south, and the grain and silks sent to the Imperial court in tribute by the rich provinces of southeastern China were carried over its waters. Most of this transport in recent years, however, has been done by steamships going by sea. The canal has not lost its usefulness, but the section through Shantung has never been an unqualified success, and is in need of repair now.

The line will follow the course of the Grand Canal from Tientsin to Techou, on the border of Shantung Province, the course being a little west of south. From Techou it will go southeast to Tsinan, the capital of Shantung, crossing the Yellow River near this city. From Tsinan it will run, in a southerly direction, through the mountainous region of Shantung to Ihsien, near the southern border of that province, where the northern and southern sections unite. It will probably pass through Tai-an in Shantung, not far from Mount T'ai, the sacred mountain of China, and the home and tomb of Confucius. The Southern section will pass from Ihsien, southwest, to Suchau, in northern Kiangsu Province, crossing the Grand Canal about midway between the two cities. Suchau is in the bed of the old Yellow River, a low-lying region of lakes and streams, but, a very fertile country, and the source of a variety of opium highly prized by the smoker. From Suchau the line will run southwest to Suh, in Anhui Province, thence a little east of south to Fungyang, crossing the Huai River just north of that city. From Fungyang it will follow, in a general way, the old highway built by the founder of the Ming dynasty from Nanking to K'aifeng but diverging a little to the west to pass from Fungyang through Tingyuen to Chuchou. This highway has, from very ancient times, been the route taken by caravan traffic between Nanking and northwest China. Pukow, the southern terminus, is a small town opposite Nanking, at one time on the north bank of the river Yangtze but now some two miles inland, the intervening ground being a reed marsh formed by the deposits of the river.

The region traversed by the Tientsin-Pukow line is not one of the richest in China, but there are many fertile districts and the mountainous region at Shantung doubtless contains mineral deposits of value. Agriculture, mining, and manufacturing will all be estimulated when cheap and rapid transportation is substituted for the slow and expensive methods now employed, but the chief value of the line will be, perhaps, its usefulness for through communication between the capital and the wealthy and populous regions of Central China, devoted to rice growing, sericulture, and manufacturing.

THE PEINLO RAILWAY

(Kaifengfu-Honanfu or Kaifeng-Lu-Yung Railway)

The contract for the construction of this line was signed in Shanghai, 1904, between H. E. Sheng Kung Pao, the director general of the Imperial Chinese Railways, and Mr. Armand Rouffart, the representative of the Cie General de Chemins de Fer et de Tramways en Chine. Article 1 of this Agreement reads:—

Article 1.—The Director-General of the Imperial Chinese Railway Company, H. E. Sheng Kung Pao, has asked, in a report, the Chinese Government that a line of railway should be built starting from a point called Yung Tse on the railway line of the Luhan where the latter crosses the river. From that point eastward to Kai-feng the line will be 170 li long, and westward to Ho-nan Fu it will cover 250 li. These two branches of the Luhan to be built by a Belgian party (groupe), which will make a loan to build them.

This proposal was accepted by a decree dated the 30th day of the 10th moon of 25th year of the present reign.

Monsieur Rouffart, the representative of La Compagnie Générale de Chemins de Fer et de Tramways en Chine, has asked us by letter to undertake this building, and we sent a Chinese official to accompany him in his preliminary study on the ground. After said study, Monsieur Rouffart estimated the probable cost of these two branches at one million pounds sterling, or 25,000,000 francs; and for all other terms the contract from Peking to Hankow are to be followed.

Under date of the 29th day of the 12th moon of the 28th year of the present reign the Wai-Wu-pu wrote to me that I was to discuss the terms of the contract with Monsieur Rouffart, and it asked me to settle the matter as promptly as possible.

Considering that Monsieur Rouffart has full powers from the Compagnie Générale de Chemins de Fer et de Tramways en Chine to negotiate this business for it, we, Director-General of the Imperial Chinese Railway Company, and Monsieur Armand Rouffart, representing the Compagnie Générale de Chemins de Fer et de Tramways en Chine, hereby enter into a contract for a loan, the product of which shall be applied to the building of the Railway from Ho-nan Fu to Kai-feng Fu.

Before signing the contract the Director-General of the Imperial Chinese Railway Company has submitted said contract for Imperial sanction, and it has been approved under date of———.

This decree shall form Annex 1 of the present contract. In virtue of the above the Director-General, on account of the Chinese Government, makes a gold 5 per cent. loan for the sum of 25,000,000 francs, or 1,000,000 pounds sterling. This loan shall be known as the Chinese Government 5 per cent. Gold Foreign 1903 Loan.

The construction of this railway has proceeded with great activity. This line runs from east to west and follows the Chinese high road between Kaifengfu and Lo-Yung (Honanfu). Lo-yang has a most important inland trade and is situated at the intersection of several high roads. The railway will be another artery calculated to add further vigour to its trade and commerce.

Sometime ago, the Belgian Government applied to the Governor of Honan for the grant of a concession in Lo-yang and the Governor has taken in hand the work of laying out a new concession to the west of the white horse temple at Lo-yang.

The first section of the railway is between Kaifeng and Cheng-chow on the Pehan line and a great trade centre. This section was easy of construction, there being little in the way of engineering difficulties.

The passenger and freight charges on this line are the same as on the Peking-Hankow Railway, or as follows per kilometer: First class passengers, $0.018; second-class, $0.013; and third-class, $0.006. First-class freight per ton, $0.083; second-class, $0.026; and third-class, $0.017.

The second section runs to Szechui, a fairly large market down at the foot of the Tin-man Mountain, not far from the Yellow River.

The section between Szechui and Heishi-kwan presents numerous difficulties. It passes through the mountainous region of the Timan Shan. Heishikwan is close to Kung-hsien, an important sub-prefectural town. Eleven tunnels some of them being 2,000 feet in length were necessary on this section, and 6 large iron bridges. The bridges were erected at Chin-kou, one at Shui-kou, and three at Shie-ti-tun.

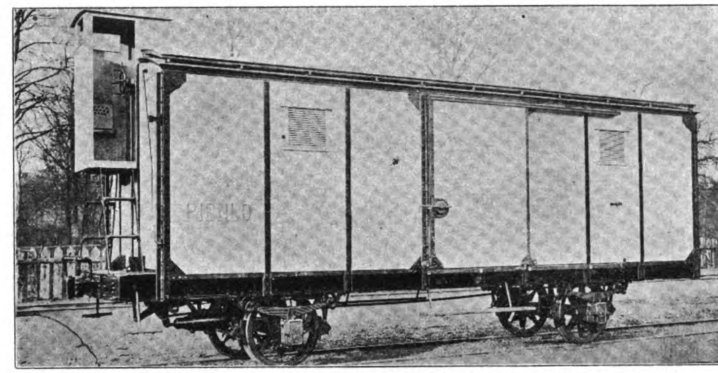
It was at first thought to give the construction of the bridges to a foreign contractor, but subsequently the Chinese decided to build their own bridges. A steel girder bridge about 1,500 feet in length spans the Lo-ho, an important tributary of the Hoang-ho.

Construction on the Chengchow-Honanfu section, was subject to frequent delays, as the rails, which are 12 meters long, and can not be made in China, were delivered by the Belgian mills very slowly. The rolling stock was sent out from Belgium knocked down and set up in the shops at Chengchow.

The bed of the Lo-ho being fairly rocky, the foundation work was not as difficult as it might have been.

The fourth section between Heishi-kwan and Honan-fu, the terminus, has been completed and trains operating daily.

The extension of the Peinlo Railway westwards to Shenchow, and Tungkwan, at the bend of the Yellow River, and thence to Hsianfu, the capital of Shensi, will be taken in hand as soon as funds are arranged for. Tungkuan is also the proposed southern terminus of a line from Taiyuanfu. The extension of the Peinlo to this point is of the utmost importance to connect with the Shensi provincial road to the capital at Hsianfu. On the construction of this link depends the success of the Shensi project. The distance is about 480 li and the estimated cost about $3,500,000 gold. A foreign loan will probably be negotiated for the construction of this extension, and it is reported that Mr. Willard Straight representing the American group of financiers has already made overtures to the authorities at Peking to furnish the required funds.



PEINLO RAILWAY.—BELGIAN COVERED GOODS WAGON (BAUME-MARPENT)

THE CHEN-TAI RAILWAY

(Chentingfu-Taiyuenfu Railway)

The railway branching off the Peking-Hankow line at the small station of Chentow, several miles to the south of Chentingfu, traverses the hilly country to the west, and terminates at Taiyuanfu, the provincial capital of Shansi. Its official Chinese name is the Chen-Tai Railway, but it is also as well known by the name of the Shansi Railway or by its French translation "Ligne du Chanse." This line of 242 kilometers in length was probably the most difficult to construct of any of the roads in the Empire. Traversing a very mountainous country, the line has steep gradients, many curves and long tunnels. The highest point reached in the line is 3,500 feet above sea level, and at its western terminus at Taiyuanfu the elevation is 2,600 feet. The air line distance between Chentow and Taiyuanfu is 120 miles; by the railway it is 150. There are 25 stations on the line a somewhat larger average than found on the main Peking-Hankow road.

It was in 1897 that the Russo-Chinese Bank and the Comptoir d'Escompte sent a French engineer, M. Hivonnait, into the province of Shansi to study its mineral resources and determine the route of a future railway.

The concession for this road was secured by the Russo-Chinese Bank in May 1898, but on resurvey the original loan agreement was increased from 25,000,000 francs to 40,000,000 francs, the bonds bearing interest at 5% per year and redeemable in thirty years. The loan is secured on the undertaking and guaranteed by the Imperial government. The Société d'Etudes de Chemins de Fer en Chine, the Belgian company holding the concession, and building of the Pekin-Hankow Line, were given the contract for the construction of the Shansi line, and its engineers commenced operations in 1903, laying the first rail in 1905 and the road opened to through traffic in October 1907. The conditions under which the concession was granted and the mountainous and difficult nature of the country did not justify the company in incurring the cost of a standard gauge road, so the meter gauge was adopted with 60 lb. rail. This difference in gauge prohibits a junction with the main line, and the interchange of cars, compelling the complete transfer of through freight at the Chentow terminal. A few years ago this place was only a village of 200 Chinese, it has now a population of several thousand, and a foreign hotel under foreign management.

The engineering difficulties of the line have involved the construction of some 22 bridges or viaducts, one of 17 arches, and 19 tunnels, several of which are over 300 meters in length.

In the eastern or lower part the line winds in and out among terraced hills and cuts through great banks of loes deposit—these "cuttings" requiring skilful terracing and draining to prevent rapid erosion, etc. Further west the hills became more formidable and call for several tunnels while the mountain streams crossed give play for the bridge-builders' skill. Coal is encountered about midway on the line. It is fine quality anthracite and is mined in great chunks about 10″×12″×16″ in bulk. The mines are within the concession of the Peking Syndicate, and the railroad does a good business in coal transportation.

The engineers who constructed the road are M. Georges Espanet, engineer-in-chief, and M. Millorat, adjunct engineer-in chief, and M. Jacques de Lapeyriere, first assistant engineer

CANTON-HANKOW RAILWAY

(Yueh-Han Railway)

The original concession for the construction of this line was held by the American-China Development Co. under a contract signed at Washington in April, 1898, by H. E. Wu Tingfang acting as representative of H. E. Sheng Kung pao, the Director General of Railway.

The final terms of the Agreement called for a loan of $40,000,000 gold, to run for 50 years, to be issued at 90 and bearing 5% interest. Provision was however made for earlier redemption. The bonds were secured on the property and guaranteed by the Imperial Government. The construction of the line and expenditure of the funds was entrusted solely to the Company, who also received 5% commission for their services of supervision and purchasing material. The Company also received 20% of the net profits of the line after operation for a number of years.

The American Syndicate was organized by the late U. S. Senator Calvin S. Brice who also directed the negotiations, William Barclay Parsons was the Engineer, and Cary & Whitridge the attorneys. The syndicate included all the great rival banking firms of New York, which are generally antagonistic to each other. J. P. Morgan, J. Rockefeller, Mr. Cassett, the Vanderbilts, Mr. Harriman, Mr. Gould, Mr. Sage, Mr. Hill, Sir William Van Horne, and other leading financiers all signed Mr. Brice's application for the concession

The survey party under Mr. Parsons arrived in China in the fall of 1898 and after considerable obstruction and delay completed their reconnoissance survey and first rough estimate.

The following summary of the work accomplished up to the time of the purchase of the concession by China, is from the pen of the late C. W. Mead, C. E., the Chief Engineer of the road, and was written for the FAR EASTERN REVIEW.

Leaving Canton the line runs N. up the Pearl River about 30 ms. where it strikes across to the Pei River following the valley about 100 ms. to Shao Chou, thence up the Wei River to near its headwaters, where it crosses a range of mountains on to the headwaters of the Lei River which flows N. into the Siang and Yangtsze; then following the Lei, Siang and Yangtsze valleys to Wuchang on the S. side of the Yangtsze opposite Hankow. The line traverses a country rich in both agricultural and mineral resources, and thickly settled except in the mountainous districts and some of the flooded sections of the Yangtsze and Siang River valleys.

Approximately the main line is 750 ms. in length, and there are about 150 ms. of branches, of which the most important is the Canton-Sam Shui line which has been constructed and in operation for 5 yrs. An important feeder leading from Ping Hsiang to Chu Chou, about 60 ms., has been constructed, and is now in operation. This brings the products of the Ping Hsiang coal mines, owned and operated by H. E. Sheng Kung Pao, to Chu Chou, where they will be transhipped to the Han Yang Iron Works also owned and operated by Sheng.

SURVEY OF THE LINE.—A reconnoissance survey was run over the entire line by Wm. Barclay Parsons in 1898-9. Since then preliminary surveys have been run from Canton N. nearly 150 ms. and 100 ms. of same permanently located. On the N. end preliminary and location lines have been run from Yo Chow, at the mouth of the Siang River, to Chu Chou, the point of intersection with the Ping Hsiang branch. This is a distance of 150 ms., and is probably the portion which will be first constructed. This section, in connection with the Ping Hsiang-Chu Chou branch will deliver coal and coke to the comparatively deep water navigation of the Yangtsze whence it will be distributed along the lower Yangtsze by boat.

The Canton-Sam Shui branch for the first 14 ms. out from Canton runs over a flat country of alluvial formation and entirely covered with rice fields, cane, and vegetable gardens. This country is cut by many tidal streams some of them being 125 ft. wide and very deep Beyond Chai Bin the country assumes a broken aspect, and many low ridges separate the various valleys across which the line runs. These ridges are mostly of soft sandstone, only one reef of hard rock being found, and that was a black basalt at Wong Ting See, 3 ms. E. of Sai Nam. The entire country except the ridges would be subject to overflow except for dykes which are about 7 ft. near Canton, while at Sam Shui the main dyke is 30 ft. high. All the streams crossed are navigable for some kind of craft at some time during the year, and this fact forced an ascending and descending grade at the principal crossings.

The first 10 ms. of this branch to Fatshan is double-tracked and the last 20 ms. is single-tracked. The double-tracked portion has 13 ft. centers and 31 ft. roadbed; is laid with 75-lb. steel rails on steel ties and ballasted with broken stone on the Canton end and sand on the Fatshan end. The single-tracked line has a roadbed 18 ft. wide, is laid with the same weight rails upon Japanese oak ties, and is entirely sand ballasted.

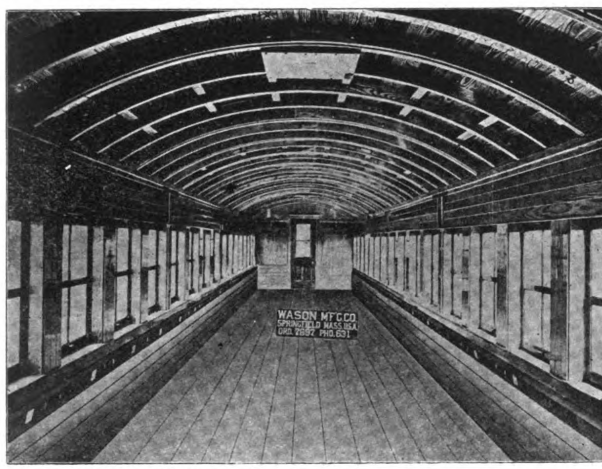
The alignment is very good having a maximum curve of 4° and none over 3° between Canton and Fatshan, except the 6° curve of 10°3 at Fatshan, which was put in order to place the line close to the town The maximum grade is 5-10 of 1 per cent and is used at five stream crossings between Canton and Fatshan and several times over low ridges between Fatshan and Sam Shui.

ENGINEERING DIFFICULTIES.—The only engineering difficulties on this division are the bridge foundations, which were made by first driving piles to a depth sufficient to give a bearing power of 12 tons on each pile. The required resistance to penetration was usually obtained in a strata of coarse quartz sand which lay from 30 to 50 ft. below the surface and varied from 3 to 7 ft. in thickness. In some cases a bearing power of only 6 or 7 tons could be obtained, in which cases special designs were made by putting in more piles and covering more ground. The piles were cut off below water-level, all the silt taken out from between them, and coarse stones were rammed in to within 2 ft. of their tops upon which concrete was built to sub-grade and granite bridge seats put on. The spans are of 10, 15, 20, and 30 ft. deck girders, and 40 and 60 ft. through girders. There is one bridge across the Sainam River with 96-ft. spans and three other bridges on the line 120 ft. long, which have one 60-ft. and two 30-ft. girders. Several box and arched concrete culverts were used, and arched road crossings below grade. Short spans were used for economical reasons as steel laid down at the bridge sites was costly, while the cost of foundations was low owing to cheap material and labor. The ease in handling short spans with unskilled labor was a large factor, and all these reasons tended to an opposite economic condition to that found in Europe and America.

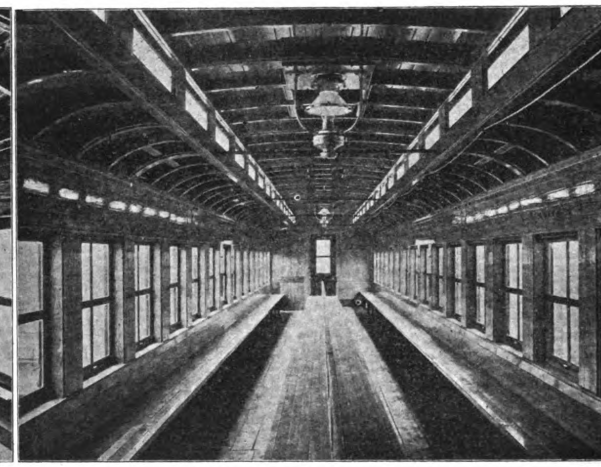
Only one permanent station was constructed and that at Fatshan. All others were small and temporary and put in at an average distance of 2 ms., thus giving the traffic an opportunity to develop and decide where stations were necessary. The Fatshan Station is a fairly handsome 2-story structure built of brick and wood and the cost was about $15,000 Hongkong currency.

A blacksmith and repair shop was established at Shek Wei Tong, which is complete enough to make all necessary assembling of rolling stock for the division and keep it in repair. This shop is entirely operated by Chinese workmen under the direction of Mr. J. Lind.

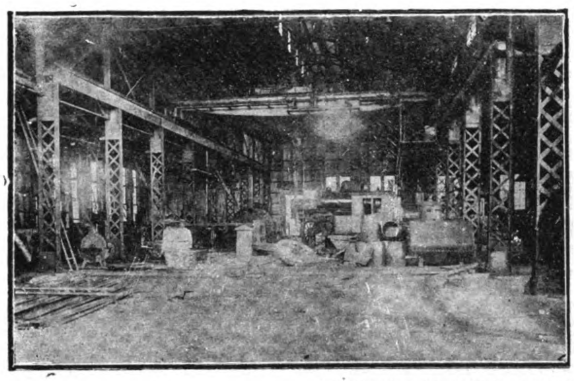
SUPERSTITION AND IGNORANCE MENACE CONSTRUCTION.—Many difficulties were encountered in the construction of this branch mainly on account of the superstition of the people and



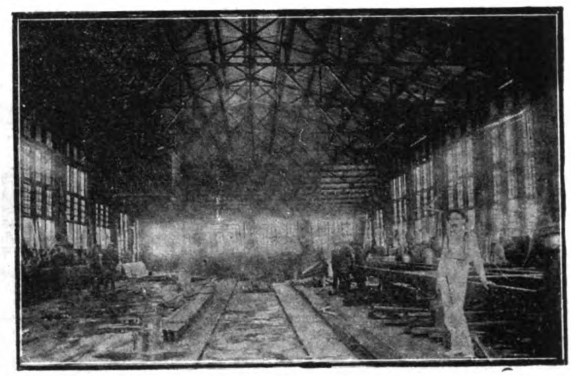
CANTON-HANKOW RAILWAY.—INTERIOR OF 3RD CLASS CAR



C. H. R.—3RD CLASS CAR FROM THE WASON MFG. CO.

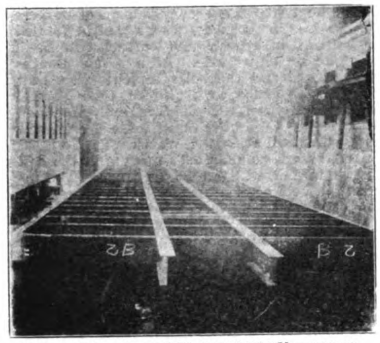


MACHINE SHOP

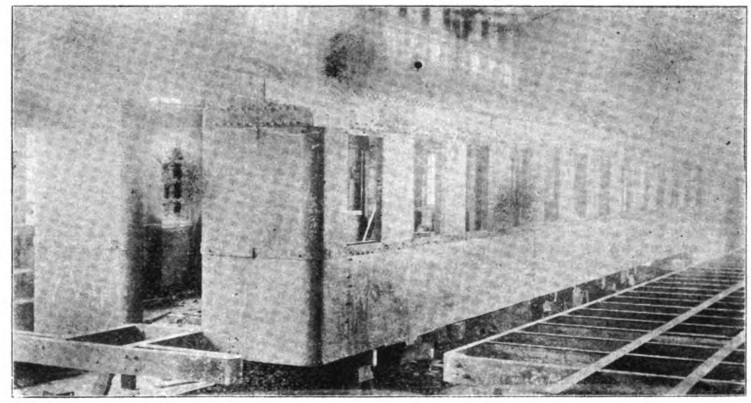


MACHINE SHOP SHOWING FRAME OF 60 FOOT STEEL CAR ON THE RIGHT UNDER CONSTRUCTION

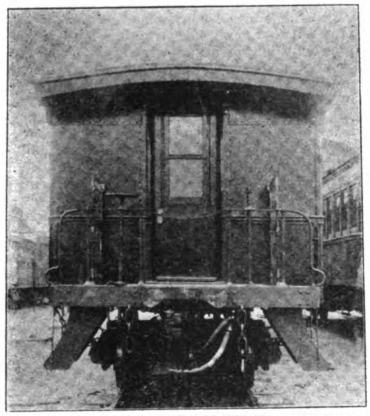
IMPERIAL CHINESE RAILWAYS.—CANTON HANKOW LINE



CANTON-HANKOW RAILWAY.—STEEL UNDER FRAME CARS BUILT AT SHEK-WAI-TONG



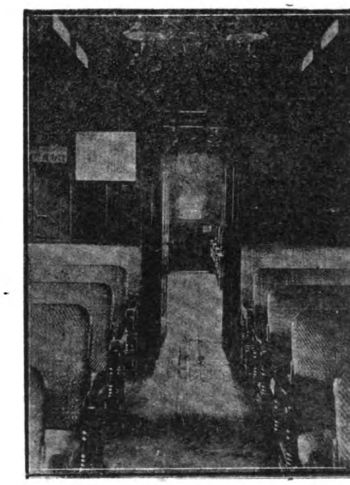
CANTON-HANKOW RAILWAY.—60 FT. STEEL CAR BUILT AT THE SHEK-WAI-TONG SHOP



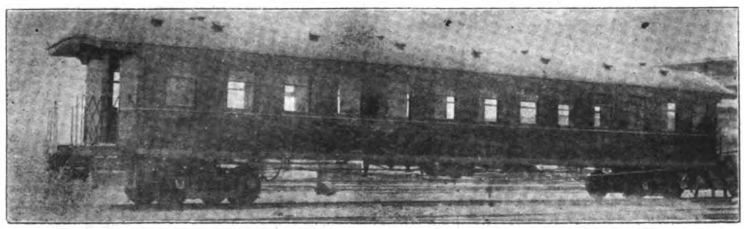
CANTON-HANKOW RAILWAY.—END VIEW OF STEEL CAR

the profound ignorance of the workmen, most of them never even having heard of a railway much less seen one, but with the blandlike simplicity of the Chinese there was no trouble in finding would be contractors who would undertake any kind of a contract for any price and agree to complete it in any time required. Experience taught the engineers that the Chinese were able to contract for earth embankments and shallow cuts, while all other work was more economically performed by using foreign foremen or letting the work to foreign contractors. At best it was slow and costly as all the workmen had to be first taught, and there were no experienced foremen or reliable foreign contractors available. The building of this line was not only a school to the Chinese employed, but it taught the engineers in charge how to take advantage of the peculiar conditions in China. That this schooling was valuable was clearly proven by the greatly reduced cost of the work performed on the main line after the completion of the branch.

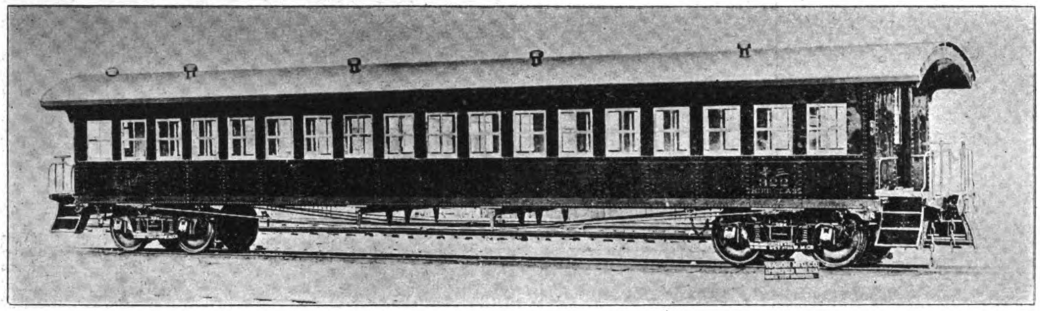
As an illustration of the difficulties encountered on account of the ignorance and superstitions of the people, when the line was permanently located to Sam Shui a strong and vigorous protest was entered by the inhabitants of a little village called Too Yuen Kong on account of a 15-ft. cut through a small hill. In this protest the people said that a tiger lived in that hill and it was the guardian of the village; that, if the railway cut through it, the tiger



INTERIOR OF FIRST CLASS COACH, CANTON HANKOW RAILWAY



CANTON-HANKOW RAILWAY.—60 FT. STEEL CAR BUILT AT THE SHEK-WAI-TONG SHOP



would escape and go to the mountains and the village would go to the eternal bowwows, the people would die, the cocks would not crow, and the dogs would cease to speak. The engineers met the chief men of the village on the ground and discussed the matter, but could bring no arguments to bear to get their consent to the location of the line, and the result was that the location was changed at this point.

METHODS AND COST OF CONSTRUCTION.—(Prices in Mexican Currency). Many unique methods of construction were used, some original and others older than the hills to the Chinese, although new to foreigners. In the construction of embankments the Chinese were fairly adept for the reason that they had been constructing dykes for hundreds of years. They entirely ignored the use of wheelbarrows or all other methods of transportation except baskets. They were finally broken in to use wheelbarrows and small cars carrying about 1 cub. yd. For the transportation of materials less than 100-ft., baskets were found to be more economical, while for moderately short hauls the wheelbarrow proved the best. The cars were used in long hauls of 1000 to 2000 ft., and at a distance of 2000 ft., ordinarily soft-cut material could be picked, shoveled into the cars and delivered into an embankment 2000 ft. away for from 20 to 25 cts., Mexican, per yd. Cost of overhaul by cars was about ½ c. per cub. yd. per 100-ft., while overhaul by basket or wheelbarrow was from 1 to 2 cts. per yd. The cost of embankments to a height of 4 or 5 ft., through rice fields, was from 10 to 12 cts per cub. yd., the cost increasing as to height of embankment, coming up to 18 or 20 cts. in some of the highest. These prices obtained on the main line after the completion of the branch. The cost of rock excavation run from 60 cts. on the softer sandstones to $1.40 on hard trap per cub. yd.

Piles cost from 25 to 35 cts. per lin. ft. according as they were 25 or 50 ft. long. The piles used were Chinese pine brought many hundreds of ms from the headwaters of the North and West Rivers. This wood is very poor—something like basswood—but is the best available and answers fairly well for pile foundations, but great care has to be used in driving to avoid breaking. A diameter of from 14 to 16 ins. at the butt is about the extreme size that is obtainable. The driving cost about $2 each. At the larger bridges steam drivers were used and at the smaller ones hand drivers. The hand drivers were handmade and operated with a whim. One of the drivers was fitted with a treadmill arrangement for raising the hammer, and it was found that the same number of coolies would drive twice as many piles by this method in a day as by hand, and this manner of working appealed to them more strongly than raising the hammer by turning a crank.

Concrete for bridge foundation was composed of 1 part cement, 3 parts sand, and 5 parts broken stone. This cost in place from $10 to $14 per cub. yd., exclusive of cost of cofferdams when used, which added from $1 to $2 per cub. yd. The cement used was the "Green Island" brand which is one of the best cements in the Orient and very satisfactory to use on account of its uniformity. Sand of a most excellent quality was found in the immediate neighborhood while the broken stone came from the North River and cost about $2 per cub. yd.

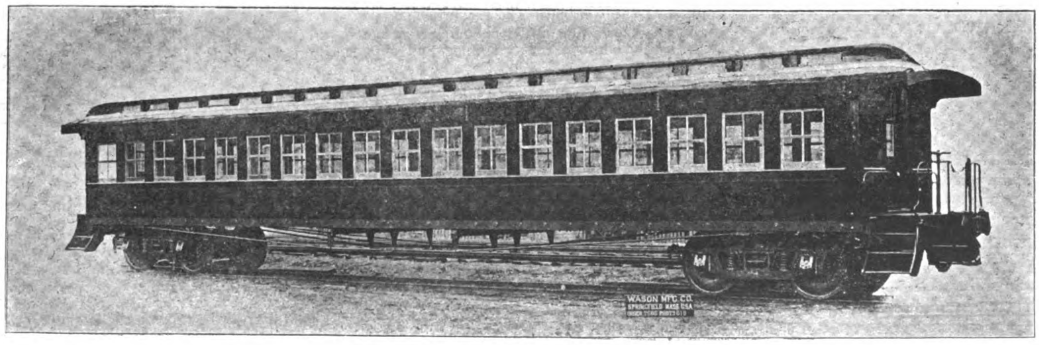
Oregon Pine was used for forms, false work, etc., and cost in Canton $70 per 1000 ft.

ROLLING STOCK.—The rolling stock is all of American make. Eight second-hand locomotives of the Manhattan Elevated Railroad were bought for $3000 gold each, and sent out for temporary and construction purposes. The standard locomotives weigh about 80 tons complete and were built by the Pittsburg Locomotive Works. Twenty 40-ton flatcars were sent out before the branch was completed and it was necessary to transform these into temporary passenger coaches. This was done by the use of rough Oregon Pine, boarding them up half way, putting on a roof covered with "P. & B." roofing, and furnished with four long benches running lengthwise of the coach. The first class coaches were the same except the benches were either covered with Canton matting or replaced with bamboo chairs and had Canton matting on the floors.

The next step was the conversion of boxcars into passenger coaches, which was performed by putting in benches and cutting two small windows on either side. After a few months first, second and third-class coaches were sent out, also baggage cars. (Since then several locomotives from the Baldwin and American Locomotive Co. have been added, and new cars purchased from the Wason Mfg. Co.)

This branch commenced to pay after the first month that it was put in operation. The increase in volume of passenger traffic was steady for 15 mos., when very nearly the maximum was reached. The receipts of this line average from $50,000 to $60,000 per mo., and the operating expenses are about 25 per cent. This makes a very creditable showing for Mr. Lind, the efficient traffic manager. An express freight has been established which is growing in popularity, and which is sure eventually to get all traffic in valuable cargo, such as specie, silks, tea, etc. It will be sometime, if ever, before this line will do a large freight business for waterways are everywhere and afford a cheap, if slow, means of transportation, and time is no object to the average Chinaman in his common everyday affairs.

THE MAIN LINE.—Construction was begun on the main line in January, 1904, and entirely suspended in October of the same year. During this time 12 ms. were practically completed from Canton to Ko Tong, with the exception of laying the rails over the last 6 ms. This work was not prosecuted vigorously as the money of the company began to get short and only a limited amount could be expended monthly. It was very unfortunate that these 12 ms. could not have been finished and put into operation, as they would have added very materially to the receipts of the company. On these 12 ms. there was one thorough cut which was about ½ of a m. in length and at the summit 50 ft. deep, and contained 112,000 cub. yds. of material. A small industrial railway was used to haul the material in this cut to make the



embankments on either end. The extreme haul was 3000 ft. and the cost was 25c. a yd. The bridges on this section were all small and single spans. At Ko Tong 15 6-ft. spans were to be put in. The foundations had not been built at the time of the closing down of the work but the spans were made and in the yard of the Wong Sha, or Canton terminal.

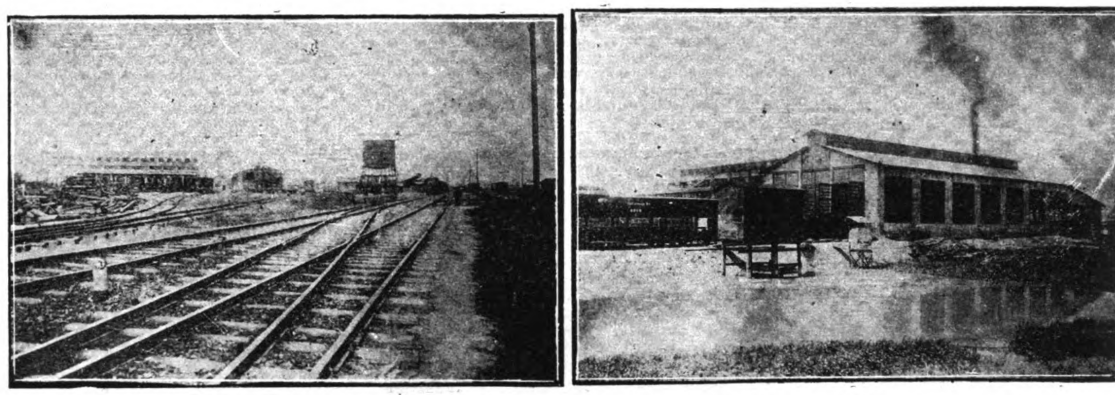
ENGINEERING LESSONS.—A summarization of the lessons this railway construction teaches to foreign engineers, and others undertaking construction work in China, is embodied in one axiom,—treat the Chinese fair and be patient. There is no man living who will do as much work, do it as cheerfully and for as little money as a Chinaman if he is treated right and handled properly. He has disagreeable attributes to be sure, but his good qualities more than offset them. It must be understood that he is of necessity almost entirely ignorant of modern methods of doing things, but he is very imitative and learns easily. When the Canton-Samshui division was put in operation all the locomotive drivers were foreigners with Chinese firemen. Within 1 yr. from the date of opening all the foreigners had been replaced by the native firemen and only one foreign expert driver retained to have general supervision over the rolling stock and teach new men. The same thing was done in handling the steam pile drivers. At first the crew was made up of foreigners who were soon replaced with Chinese. This applied through all the work, and when construction was suspended there was very little need of skilled foreign foremen, as Chinese skilled workmen had been developed in all lines

The history of this concession is an old story. Belgian interests representing French and Russian capital, persistently obstructed American negotiations for the concession, and when the latter secured the final agreement providing for a loan of $40,000,000 instead of half that amount as originally outlined, the European combination set to work to undermine American preponderance by purchasing shares in the open market. By the death of Senator Brice the American syndicate lost the one man whose influence would have pulled the enterprise through to a successful termination, and it would appear that his associates lost heart in the scheme The Belgian agents were scouring the New York market for shares and when they had control of the situation, Mr. Parsons, who had succeeded Senator Brice, was superseded as President of the American Company by General Whittier, the agent of the Belgian syndicate in New York, and the China manager and the American engineers were recalled and replaced by Belgians. China, however, protested against the situation, and refused to officially recognize Belgian preponderance, claiming that the spirit of the concession had been violated by control of the American-China Development Co. passing into their hands. Through the efforts of J. P. Morgan & Co. the control of the Company was again secured for American interests, but China had set her heart on cancelling the concession and building the line herself

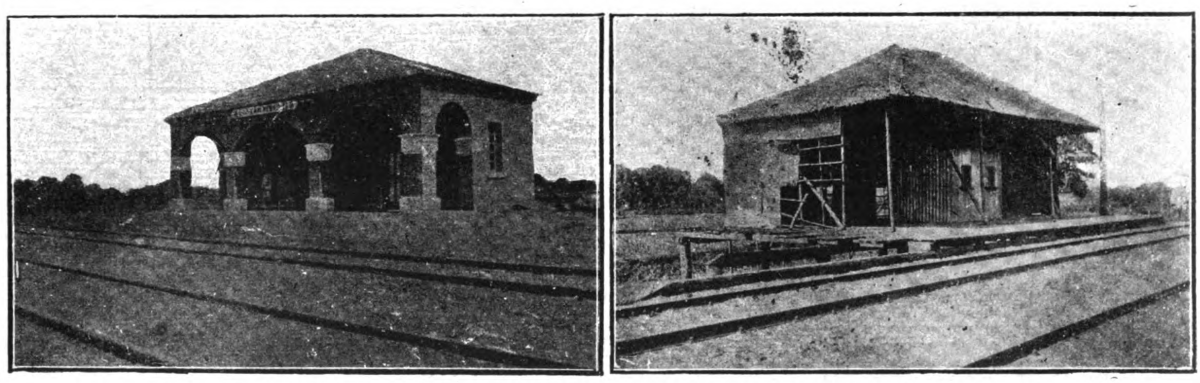
The American Government also assured China that the American character of the company would be maintained, but several months of delay followed. Work was stopped and the Chinese chafed under the inaction.

Sheng Kung Pao dispatched his Foreign Secretary, Mr. J. C. Fergusson, to America to investigate the situation and ascertain the cause of delays. His report stated that Gen. Whittier as President of the Company assured him that work would be resumed at both ends of the line as soon as materials and tools could be shipped to China. Gen. Whittier declared that the concession had never been sold, and would not be, and the stock books showed that of 6000 outstanding shares, 3200 were owned by American citizens, members of the original syndicate; 1,004 by a French Banking house, and the balance 1,796 by Belgians. As a result of further delays in resuming work, Sheng insisted on the cancellation of the concession.

After lengthy negotiations the Americans finally consented to forego their rights in payment of $6,750,000 gold. This represented an expenditure of $3,000,000 for the 30 mile Samshui Branch, and about 50 miles of completed earthwork on the main line, and $3,750,000 as compensatory damages for the loss of valuable rights. This figure has been commented on as unduly excessive. Americans maintain that the influences working against them in China, and the Chinese desire to get rid of foreigners and build the road with their own money, was so strong that any attempt on their part to insist on retaining the concession would have been viewed as a desire to obtain political advantages. It takes time to reorganize a new railway staff, float bonds, and secure funds for the purchase of materials, and



CANTON-HANKOW RAILWAY.—THE SHEK-WAI TONG YARD AND EXTERIOR OF MACHINE AND CARPENTER SHOP



IMPERIAL CHINESE RAILWAYS.—CANTON HANKOW LINE. STANDARD THIRD CLASS STATION BUILT BY CHINESE. STATION BUILT BY THE AM. CHINA DEVELOPMENT CO.

the work would have been pushed ahead in due time. Chinese opinion had been turned against Americans by a very carefully planned campaign and there was no use fighting it, especially as all papers published in China were under foreign influence and secretly opposed to America's entrance in the field. The entrance of J. P. Morgan & Co. into the syndicate was sufficient to guarantee the carrying out of the programme, but at the outset, it was seen that this made no difference to China, who was determined to force through a cancellation of the concession, as a sop to the new national spirit engendered by the Japanese successes of the war with Russia. The Belgians during their brief control openly attacked the work of the American engineers, and described the survey of Mr. Parsons as useless. As they were in high favor with Sheng Kung-pao owing to the harmonious relations prevailing during the construction of the Peking-Hankow Line, their stories helped to decide the point. Sheng Kung-pao in listening to these Belgian yarns apparently forgot that Belgian surveys and estimates were not always of a high order, as the Belgian surveys of the Peking-Hankow line were never delivered to him, until after he had presented them with a copy of the American survey and estimate of the line, prepared by Captain Rich. For weeks he had requested them to submit their surveys and estimates, and for weeks they requested that he first hand over to them Capt. Rich's reports. After several weeks of sparsing to cross-purposes, the Chinese holding out for the Belgian estimate, and the latter refusing until the American one was delivered to them, Sheng turned over Capt. Rich's estimates and surveys, and within a week the Belgian final official report was filed, strangely coinciding with the American figures.

In giving up the concession for a financial consideration, the American syndicate acted according to the best traditions of their country towards China. As a purely business propositions the concession, if carried through, was worth so much to the syndicate. If China was willing to pay a fair figure to redeem these rights, and build the road with her own funds, the American syndicate was entitled to a fair compensation for the loss of future profits.

There was no diplomatic pressure brought to bear on Peking to retain any commercial or political advantage under the terms of the concession. The Chinese in their enthusiasm were to raise the funds at home to repurchase the rights and construct the road, and American sentiment deferred to these laudable ambitions. And from this point the second chapter in the history of the road opens. When the time came for payment, the funds were not forthcoming. Chinese patriotism did not rise to these sublime heights, and Viceroy Chang Chih-tung was at his wits' end to secure the necessary money. The British Consul at Hankow seeing the opportunity to secure for his country the rights abandoned by America, was instrumental in bringing around the negotiations leading to a loan of £1,000,000 from the Hongkong Government to pay the American release. And here America set an example to China, which has been tenaciously opposed and rejected by European Powers. America permitted her interests to be purchased with the idea of assisting China towards control of her own railways, but she was forced to witness her rights turned over to Great Britain and paid for with British gold. Whenever the Chinese Government has approached Russia, Japan or Germany with the idea of purchasing her lost railway rights the invariable answer has been an unusually high figure and then only on the condition that the money be raised in the country.

The Chinese have struggled for four years to build the road with capital raised in the country but with little success. A joint stock company was formed with a capital of $40,000,000 Mexican on which calls have been made and the work carried on. H. E. Liang Chen-tung was appointed Director General of the Road under the style of the Canton-Hankow Railway Administration of three Provinces, and under his supervision some substantial progress was made, but the jealousies and discords of the shareholders, and refusal to pay up instalments when called on, led him to tender his resignation about two months ago. When he assumed charge there was 6,340,000 Taels in the treasury, paid in on the first instalment. From this sum the interest of the loan has been paid, land rights secured at the Wongsha Station amounting to Taels 1,250,000. Rails, sleepers, locomotives, cars, machinery and supplies purchased to the value of Taels 900,000. Most of the sleepers are from Tasmania. Rails were ordered from America, England and the Hanyang Iron & Steel Works. Ten passenger cars and 50 construction cars were purchased from the Wason Co. of America, and engines from the American Locomotive Co. At about the end of the year there was a balance of Taels 2,620,000 in the Bank.

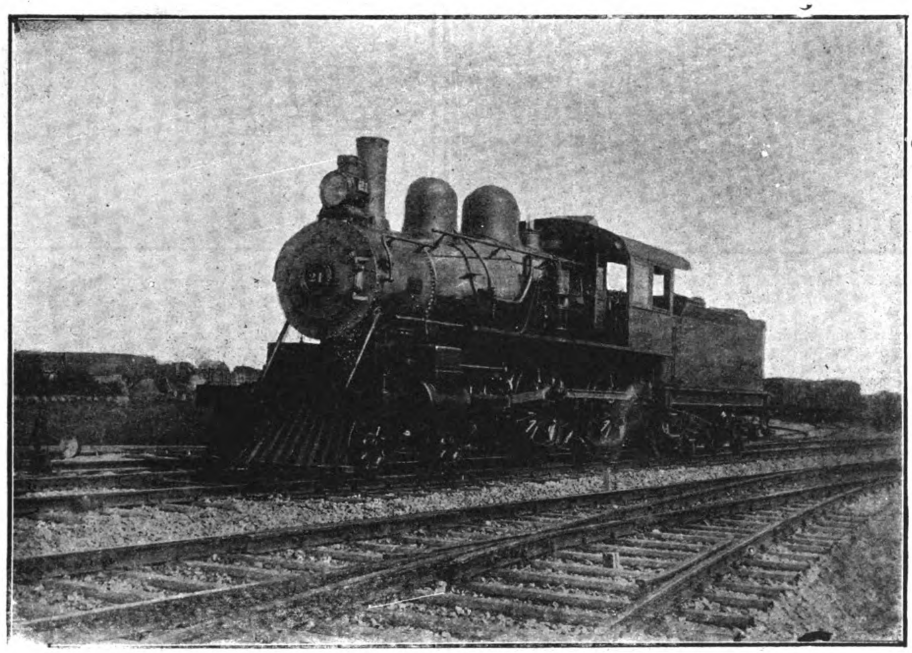
This British Government loan for £1,000,000 bears interest at 5% redeemable in 10 years, and secured on the opium revenues of Hupeh, Hunan and Kwangtung, the three provinces through which the future road will run. On September 9, 1905, Viceroy Chang writes to the British Consul General (Mr. Fraser) at Hankow, as follows:

"In view of your services in obtaining for me a loan through the Hongkong Government of £1,000,000 on very fair terms, wherewith to redeem the Canton-Hankow Railway, I give you a binding assurance that, should it be necessary to borrow funds abroad for the construction of the Canton-Hankow Railway, British financiers shall have the first option of undertaking the business, and, if bought abroad, British firms shall have the first option of supplying the machinery and materials."

In the same letter Viceroy Chang stated "with regard to the engineers for the construction of the Northern Section of the Canton-Hankow railway, it is declared that one half will be of the nation that lends the funds, and the other half will be Japanese."

So the Americans were tricked into selling out their rights, only to have them turned over to Great Britain, in case China could not raise the money at home.

After the redemption of the loan from the American China Development Company, the Railway was divided into three sections: the Kwangtung section, which was to be built by a Commercial Company composed of Cantonese; the Hunan section for which the Hunan gentry were to be responsible; and the Hupeh section, which was to be built by the gentry and officials of the Province. The Canton Commercial Company has been in a constant turmoil, but



IMPERIAL CHINESE RAILWAYS.—CANTON-HANKOW LINE. ENGINE NO 21. BUILT BY THE AMERICAN LOCOMOTIVE COMPANY

during the last two years, while Sir Liang Cheng-tung was in control, considerable progress has been made in construction. Somewhat over 100 miles of the line, reaching northward to the Hunan border, are now in operation. Nothing has been done in the Provinces of Hunan or Hupeh, and although many efforts have been made to raise funds, there has been no ready response from the people. The whole line is already handicapped by the yearly payments of interest and principal on the £1,100,000 borrowed from the Hongkong Government, and by the necessity of payments for interest upon the bonds amounting to gold $2,125,000 still in the hands of the Belgian shareholders of the American China Development Company.

Finding that it was impossible to build the road with purely native capital, the Chinese Government reluctantly admitted that it must have recourse to a foreign loan, and in conformity with the promise made by Viceroy Chang to Consul General Fraser, negotiations were opened with the British & Chinese Corporation to furnish the funds. The history of these negotiations has formed a large part of events in China of the last year. At this date, with all the facts of the situation before us, it is now easy to understand some of the reasons underlying the Chinese attitude in breaking off the negotiations with the British Syndicate and turning to the Germans. The history of British Railway loans in China has been a studied reflection on the honesty and capacity of Chinese officials, and as such is deeply resented, and China has retaliated against British interests as a result. British loans, like the Peking-Newchwang Agreement, tend to complete British domination of the railway, for their own peculiar interests. Where they had full control of expenditures, the Chinese are dissatisfied with the excessive costs. The basic principle of all British Loans to China, is that China is incompetent to manage her own affairs, and China has learnt from experience that she can hope for little modification of such views. The agent of the British syndicate in Peking although one of the most experienced men in China, utterly failed to recognize the change that has come over Chinese officials as a result of the workings of British loans, and stubbornly held to the old contention that a British Chief Engineer must either control or vise all accounts and expenditures. The last loan issued to China under the joint direction of British and German Banks, had resulted in breaking this principle owing to German initiative. In the Tientsin-Pukow loan, China had complete control of the funds and expenditures, and also of the Chief Engineer. But when the time came for another purely British loan, the agent of the Corporation reverted to the old order of things, and the Chinese baulked, and finally refused to have any further dealing with him or the corporation. Under these circumstances China naturally turned to those who had displayed more confidence in their honesty, and negotiations were opened with the German Syndicate. The latter taking advantage of the situation, and having set the precedent in the Pukow Agreement were ready and willing to advance the necessary loan on the same general conditions. A loan was therefore arranged between H. E. Chang Chih-tung and the Deutsche-Asiatische Bank for £3,000,000 at 5% for the construction of the Canton-Hankow Railway, on lines almost identical with the Tientsin-Pukow Agreement. This was signed on March 7th, ulto., and immediately the full significance of the move was made clear, an official protest was entered at Peking by the British Minister.

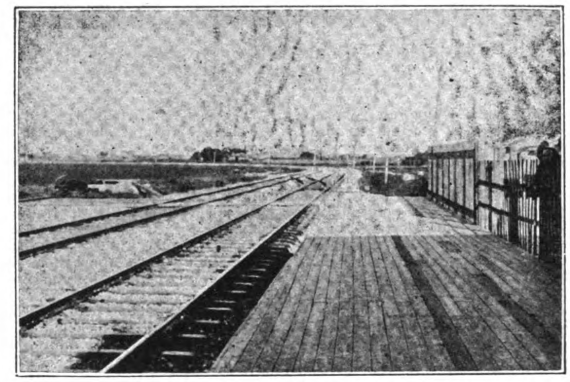
The history of these negotiations with all its detail of charges and countercharges of bad faith between the British, French and German financial groups is still fresh in the minds of the public, and are too tedious to bear repetition.

Briefly an understanding was finally arrived at in which the three groups were to participate equally in a new loan, in which was also included the construction of the Hankow-Szechuen Railway. Negotiations were proceeding favorably towards this end when another halt was called by an official protest from America, against the consummation of the deal, as under an agreement of August 1904, Price Ching gave a written promise to Minister Conger that in the event of the flotation of foreign loan for the Hupeh section of the Szechuen Road, China would first consult America and Great Britain. Protest was also made against the clauses in the proposed Loan Agreement giving preference to British, German and French materials as being contrary to the principle of the Open Door. At the same time a powerful group of American capitalists entered the field for a participation in the loan. An official statement from Washington was published at the same time explaining America's attitude.

The following is the text of the statement which the Washington Government issued last month regarding the formation of an American syndicate to undertake investments in China:

"The Government of the United States is much gratified at the formation of a powerful and responsible American financial group to enter the important field of investment in China and is giving to the enterprise that cordial support which the Department of State stands ready to give all legitimate and beneficial American commercial and financial undertakings in foreign countries. Such undertakings are to be encouraged because of the direct benefit to American commerce and to international relations. Since the Russo-Japanese War there has been great activity in railway building in China. A number of preliminary contracts were negotiated prior to the Boxer trouble and now have been reaffirmed in final form and the work of construction commenced. Not only has China granted to the British, French and German financial interests concessions to build railway lines, but the Government has already borrowed abroad to purchase the line now running between Peking and Hankow, from the financiers with whom the railway was jointly operated. In 1904 the American Minister at Peking, on behalf of American capitalists who desired a concession to construct the Hankow-Szechuen railway, approached the Chinese Foreign Office. In reply he received the assurance that if China could not herself furnish the funds, American and British capitalists would be notified and be given the prior right to supply the sum needed. In 1905 the American Government was twice approached by the British Ambassador, who stated that British capitalists desired to open negotiations for funds to construct the railway. No American capitalists happened to find it convenient at that time to co-operate with the British interests in their preliminary negotiations and the British Ambassador was so informed. On 2nd October, 1905, French and British financial groups signed an agreement to co-operate in securing various loans in China. In this agreement provision was made for American participation and a period of twelve months from the date of signature named as the time within which American capitalists might notify the British and French groups of their desire to share in their activities. The preliminary contract which was initiated at Peking on the 6th June provides that the British, French and German groups shall furnish China with funds to construct the Canton-Hankow line and the Hupeh section of the proposed Hankow-Szechuan line. German co-operation in this enterprise was arranged as the result of the dispute regarding the rights of the British and French group, as opposed to those of the German financiers who in March last secured a preliminary contract to float a loan for the construction of the Canton-Hankow Railway.

"Although American capitalists did not, owing to financial conditions in this country, find it convenient to accept the British invitation to co-operate with the British and French groups in endeavoring to persuade China to make the foreign loan for the construction of the Hankow-Szechuan line, it is fortunate that before the negotiations were terminated, the organization of this powerful American syndicate has made it possible for China to fulfil her agreement and grant to the United States participation in this loan in accordance with the Wai Wu-pu's promise of 1904. The Chinese Government was notified of the formation of the American group prior to the recent tentative initiating of the loan contract. Although American capitalists did not take up this matter in its formative stage, it is not felt that the interested parties will contend that one of two joint concessionaries can determine the period of time within which the right of other may lapse, nor is it believed that, having been notified of the readiness of American capitalists to participate in this loan, the Chinese Government would attempt to avoid fulfilling its clear obligation to the United States. The Department is following the situation with great interest and looks forward with confidence to a satisfactory arrangement between the American group and the German, British and French financiers."



VIEW OF TRACKS ON CANTON-HANKOW RAILWAY FROM FATSHAN STATION

Although the loan agreement has not yet been signed it is understood that the total is fixed at £6,000,000 to be equally divided between the German, English, French and American banking groups.

The terms are the same as have been insisted upon by Chang Chih Tung from the beginning of the negotiations, the provisions for expenditure and auditing being along the same lines as the Tientsin-Pukow agreement. The Chinese recently stated that it may be noted in this connection that the recent dismissal of officials of the Tientsin-Pukow railway was based on acts in no way reflecting upon the regulations for management of the finances of that railway.

On the Hankow-Canton line, English and French engineers are to be employed; on the Hankow-Szechuen line German and American engineers. In the purchase of materials for both lines, China is to have the benefit of competition between the manufacturers of all four countries upon such materials as cannot be purchased in China.

It is understood that the price to China will be 95. The arrangement is the best yet made for China, as she has the prospect ahead of securing real competition on the part of foreign manufacturers, untrammelled by biased specifications or partially of prejudiced engineers.

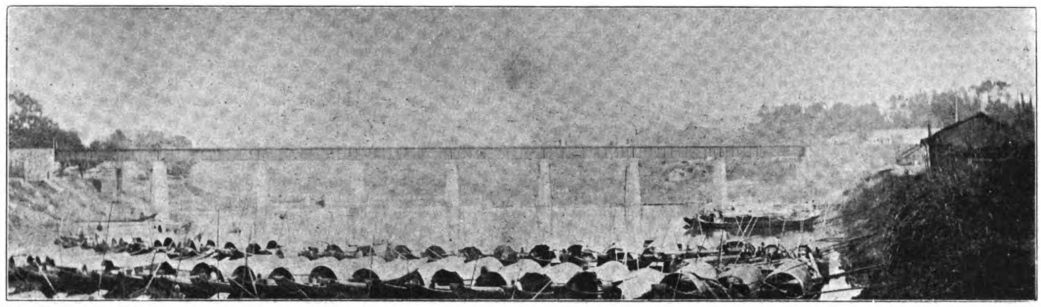
CHUCHOW-PINGHSIANG RAILWAY

This line was originally surveyed by the party under the American Engineer, Wm. Barclay Parsons, in 1898, at the time the reconnaissance was made for the Canton-Hankow Railway. Although this proposed branch was not included in the terms of the original agreement with the American-China Development Co., the right to take it over and operate it in conjunction with the main line was subsequently conceded by Sheng Kung Pao. Work had already been commenced on the road in 1899, under Chinese initiative to facilitate the transport of coal from the An-yuen Mines at Ping-hsiang to Chuchow for shipment to the Steel Works at Hankow. Capt. Rich, the American Engineer who originally surveyed the Peking-Hankow Line, was engaged by Sheng to superintend construction, and another American, Mr. McCalla, completed the work as Chief Engineer. Several American engineers were also employed in the work, and H. E. Taotai K. S. Low then railway engineer under Sheng also took a leading part in construction, specially in the bridge work. The cofferdam for the piers of the Liling Bridge were several times carried away, while under foreign supervision, and the case looked hopeless until Engineer Low assumed charge. By working night and day for four days the concrete foundations were put in, just in time to prevent a repetition of former disasters by the freshets. The first equipment of the road was American. Under German supervision of the mines these materials have since been largely superseded by German products. The line is standard gauge, well ballasted, but with soft wood sleepers. Including the rolling stock, bridges, terminals, stations, etc., the entire cost of the 70 miles of line was approximately Taels 3,600,000 or roughly $36,000 (£7200) per mile. It is interesting to keep this cost in mind, as the road was constructed under purely Chinese supervision, with Chinese funds, but with foreign engineers employed by Sheng Kung Pao. The nearest comparison to this line is the somewhat similar undertaking of the British Peking Syndicate railway, built with purely British funds, under British supervision and the use of British products, having the same objective—the transportation of coal from the mines to a navigable river. This 90[mile standard gauge line, cost to construct £614,600 or a little under £7000 per mile, or allowing for certain contingencies the same as the Chinese built Pinghsiang line. The result is an object lesson of the capacity of the Chinese to handle their own funds. Admitting the truth of the basic principle of all British railway loans and allowing for a high percentage of "official commission" to the Chinese it is clear that under these conditions China can build her roads at less cost than when the same work is done by foreigners.

A correspondent of the "Celestial Empire" writing from Changsha on Aug. 5th last, gives us the latest accurate information about this line.

"Starting from the immense coal districts, 15 li (5 miles) east of P'inghsiang Hsien, in western Kiangsi, the line follows a very easy grade to a point under the south wall of the last mentioned city. Here a substantial brick depot was built, and the line proceeds almost due west to Lao Kuan (Old Customs Barrier), a few hundred feet beyond which it pierces the good stone wall forming the Hunan-Kiangsi border. From P'ing-hsiang to Li-ling, the first large station in Hunan is 90 li (30 miles), and the road does not enter the city, but skirts it about one mile to the north. A fairly good Chinese road connects with the city, but is troublesome, in that the Li-ling river has to be crossed, by native ferry, en route, and passengers who try to visit Li-ling in the hour allowed between the two early morning trains from An-yuen, find themselves rushed.

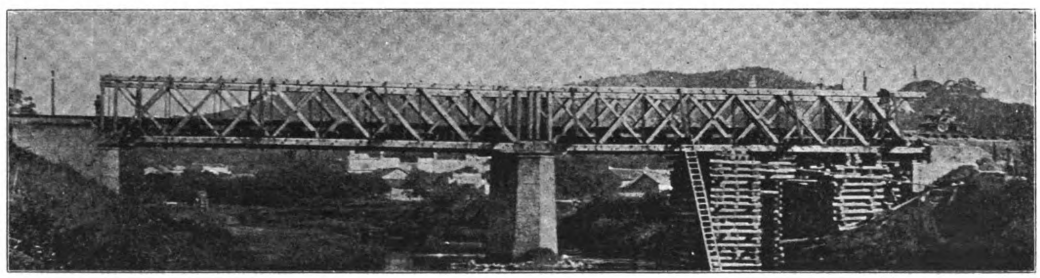
The Railroad crosses the Li-ling river on a good wooden bridge, brick piers, just a short distance west of the station, and several smaller stations are passed ere the terminus, and large station of Chu-cheo is reached. This place is situated on the Siang River, is 20 miles above Siangtan, and 90 li, or 30 miles due due west of Liling Hsien. The Railroad is thus seen to be only 195 li long, or a little less than 70 miles, and runs due east and west. Its main business is the transportation of coal and coke, passengers coming in merely as an accommodation. Three classes of this latter are offered, and the rates are very reasonable; First Class is $1.44; Second $1.08; Third, 72 c. and of course the larger percentage of tickets are sold for the latter class.



PINGHSIANG RAILWAY.—EIGHT 60 FT. SPAN PLATE GIRDER BRIDGE OVER THE LU KIANG NEAR LILING CITY

THE AN-YUEN MINES

An-yuen, or Peaceful Spring (or Fountain) is the name given to the immense mines developed among these low-lying hills just to the east of P'ing-hsiang Hsien, Kiangsi. The name does not appear on the ordinary Chinese maps, and is likely of recent origin. The town is situated at the headquarters of the Siang-tong (Li-ling) River, all the water on the other or eastern slopes, of the hills, flowing east into the Yuen-cheo Fu (Kiangsi) River, and thence to the Po-yang Lake. Thus an easy gradient is had from end to end of the line, and it is noticeable that no deep cuts have had to be made the entire distance. The Railroad in fact follows the ancient, and formerly much used, Great Barrow Road from Siang-tan and Changsha, in Hunan, to Yuen-cheo Fu, Lin-kiang, and Nan-ch'ang Fu, in Kiangsi. Great quantities of the small Mandarin oranges are grown on the P'ing-hsiang plains. The very name



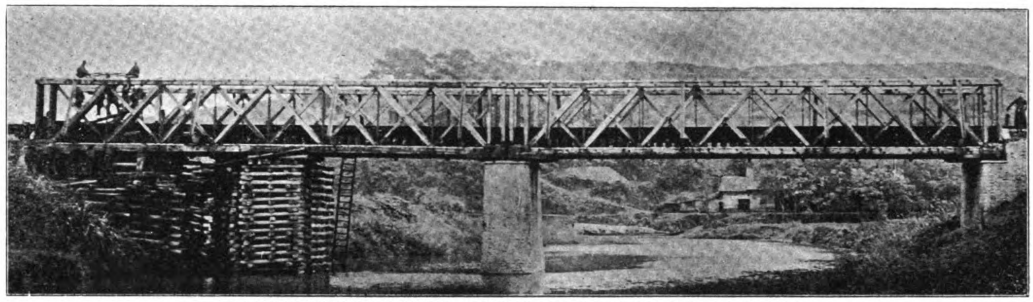
PINGHSIANG RAILWAY.—WOODEN TRUSS BRIDGE NEAR PINGHSIANG CITY

of the town indicates the nature of the country. Much grass-cloth is produced in the district north and north-east of P'ing-hsiang, this being well-known in the two Provinces as Wan-tsai "hsia-pu."

The Mines being the all-important industry of An-yuen, and the one reason for the existence of the Railroad, we will begin here to describe some of the noteworthy things that strike the visitor. Having heard that there had sprung up quite a Chinese town here, with also a well laid out foreign settlement, and many foreigners housed in comfortable foreign houses, and that the more commercial Germans have reduced this down so much that there is said now to be no cessation of work.

COAL AND COKE.—The three great mines of An-yuen thus work night and day, sending out a continuous stream of coal, which is transported, for the greater part, to Hankow and Wuchang. Some of it even now finds its way to Japan. The coke is burnt on the spot, in the great furnaces erected for this fast growing industry, and the output has been lately much increased. The largest of three coal mines is a vertical shaft, opened up on three levels below, and the total output of coal and coke at present is about 1400 tons, with capacity for at least one third more. The other mines are opened horizontally into the sides of the mountains. The whole district, for a distance of some 10 li, is said either to be owned by the Company, or that they effectually forbid other mining operations, under the contention that their own business might suffer. From 300 to 375 tons of coal and coke is sent down to Chu-cheo by each train, and from 4 to 6 trains are run each way, daily. These run at only about 20 miles per hour, so that the time, including stops, is about four hours. The proportion of coke and coal at the present seems to be about two tons of coal sent down, to one ton of coke. This coke is made from the coal screenings, or the fine coal, and the most of that seen appeared to be under the average for size, and 2 and ½ tons of coal are required to produce one of coke. This is burnt, in tightly closed parallel furnaces or ovens, for a considerable period, then is forced out on to a wide berth alongside the Railroad track, water is freely thrown on it from a hose, to cool it, and it is at once loaded into very high, steel built cars, expressly made for the purpose, (and made to dump the whole load easily), and off the train whisks for Chu-cheo.

A GERMAN SETTLEMENT.—The mines are at present operated by, and in charge of a colony of 24 Germans, among whom are 5 married couples, with 4 or 5 children. These all live in the various houses noted above, and, while it is not very high here, they remain throughout the summer months. Mr. Leimung is Engineer in Chief, and a Prof. Schmidt has charge of the College of Engineering, Mining, Language, etc., while at least two doctors are on the spot, Drs. Schmidt and Zimmermann. In the school



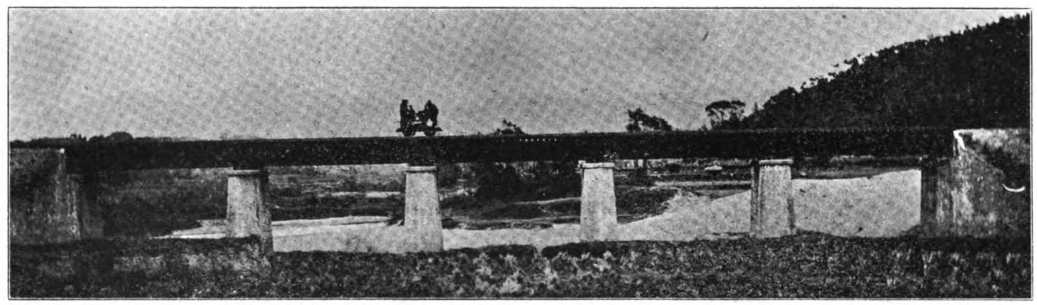
PINGHSIAN RAILWAY.—WOODEN BRIDGE AT NGAN CHOW ISLAND

great shops had been built, in which, it was averred, anything from a pin to a locomotive could be turned out, one was in a measure prepared for the many surprises of a personal visit.

Stepping from the train, one seems all at once to have arrived at a miniature Pittsburg. Tall, well built chimneys, clouds of smoke, the roar of furnaces and machinery, the rumble of trains or coal cars being pushed in all directions by blackened images called "men," and then the beautiful sight of the various houses, club, administration buildings, offices, etc., neatly placed on hill-side or top, or adjacent to the great shaft from whence issues the black stream of precious coal.

To the left, or north of the mines and foreign dwellings, etc., is situated the native town which has grown up, and here can be found a full 10,000 men, from the three provinces of Hupeh, Hunan and Kiangsi, with the latter naturally predominating. These are the miners and workmen who are worked in two shifts, day and night. Formerly a holiday was given twice per month, on the 1st and 15th of the Chinese moon, but the demands for coal, and likely young men are trained for the many branches that require more skilled labour. The railroad engineers, conductors, etc., are all Chinese, and there is no foreigner at Chu-cheo except Capt. Nielson, who has charge of the Transport Department, engaging some 40 Chinese clerks and all housed in a large, two-storied foreign building near the R. R. terminus. Here are located the large coal and coke yards, and much of this is now loaded directly from the trains into the large lighters towed down by the recently acquired German steamer Mei-yu, of Yangtsi R. service. For the Com pany's convenience the Customs have opened a special Office adjacent to the Transportation Building, placing Mr. H. Wyatt in charge. The P'inghsiang coal sells at from 4 to 6 Taels per ton, and the coke brings 10 and 11, and is now being sold at Changsha.

The Hankow-Peking Railroad, if ever built is destined to pass through the small town of Chu-cheo, and then easier connection can be made for the mines; at present launches ruu each morning from Changsha and Siangtan and about two days is required for the round trip, with one night over at the mines.



PINGHSIANG RAILWAY.—30 FOOT PLATE GIRDER BRIDGE ACROSS THE SHA-HO NEAR LILING CITY

IMPERIAL PEKING-KALGAN RAILWAY

In the late seventies, a band of Chinese students were sent to America to be educated. Before their studies were completed they were recalled by the Chinese government, as it was thought they were imbibing ideas prejudicial to the old established order of things in their native land. Some had already graduated and were pursuing post graduate courses, but the majority were cut off just at a time when they would have passed their final examinations, had they been permitted to continue. On their return to China, instead of receiving marks of distinction, they were ignored, and treated as traitors. Those whose families were well to do, fared well, but the lot of the others was a hard up hill fight for recognition. From insignificant clerkships and minor official positions, many of these youths have gradually risen, through sheer pluck and superior intelligence, to the most important offices of the Empire. Tang-Shao-yi, the distinguished diplomat, Liang Tung-yen, the Minister of Foreign Affairs, Liang Ju-hao, the Manchurian Councillor, Chung Mun-yew, the transportation director, Sin Liang Chentung, another diplomat, Chow Chang Ling, a Railway Director, Low Kou Shiu, the Railway Expert, Kwong, the engineer, Tong, the telegraph manager, Kwang the navy yard Director, and many others make up the list of those who have struggled from the bottom to the top. And among this group of students who went to Yale, was one Chan tien-yu. Chan had a mechanical turn of mind, and while his comrades went in for law and general studies, he selected civil engineering as his special hobby. This was an extraordinary thing for a Chinese youth to do thirty years ago, but Chan seemed to divine the future and plugged ahead, with tripods and wheels and finally mastered his subject and graduated as a Civil Engineer. His school boy friends did not like his name Chan, and they dubbed him "Jimmy" which is the sound of his name in the Peking dialect, and through his school days he was familiarly known to all under this sobriquet, and his com-

panions from China followed the lead of the American boys and Chan became Jimmy, and Jeme it remains to this day. After graduating from Yale, Chan went to England and matured his engineering education, and was finally elected some years ago a member of the Institute of Civil Engineers. On returning to China, he looked around for a position, and was given employment by Mr. Kinder on the I.R.N.C. as Assistant Engineer. The foreigners made Chan work hard and tried to rub it in that he could never be a real engineer, despite his degree. But he persevered and for many years was kept out in the field. From Assistant he was promoted to Resident Engineer of a section, and was shifted around to the various posts on the road. But despite all the knocks of his foreign companions who viewed his work with envy and jealousy, Chan succeeded in pleasing his Chief, Mr. Kinder. The wheel of fortune gradually turned for him as it had for his old schoolmates, and several years ago saw his friends high in power under Yuan Shih-kai, and his old school chums, Liang Juhao, Chow Chang-ling, Tang Shao-yi and others, directing the road of which he was only a subordinate engineer. When China decided to build the Kalgan Road, without foreign interference and under the supervision of her own engineers, there was only one logical choice for the man to direct the work, and much to the discomfiture of foreign aspirants for the position, the modest and unassuming "Jimmy" was appointed to the task. "Pooh! Pooh!" the foreign engineers cried, "this little apprentice boy of Kinder's can never do the work, there is not a Chinaman living who can push a railway up the Nankow Pass to Kalgan, with its rise of 1,800 feet in 10 miles. The scheme is almost impracticable and a most serious engineering proposition for even a successful foreign engineer to undertake, let alone an inexperienced Chinese apprentice," said the envious ones. But Chan tackled the job the critics said was impossible and to-day, after many trials and much difficult work, the road with over a mile of tunnels has been completed at a cost of under $50,000 gold per mile, a record in mountain railway building.

Honors have been heaped on the successful engineer and while his intimates still speak of him affectionately, as plain Jim, to the world he is now His Excellency Taotai Chan-tien-yu, Consulting Engineer to the Imperial Board of Posts and Communications, and destined for much higher and better gifts from his government.

There is a reason for his success. China's honor and the capacity and honesty of her sons were at stake on this undertaking, and everybody pulled together to show the foreigner what China could really do when free from outside interference. Do the critics give him any praise for the work? Not yet. They are waiting for a tunnel to cave in, or a train to fall down an embankment to be able to say, I told you so! When the first section was completed, Jeme made a speech at the opening ceremonies, in the presence of several foreign engineers of neighboring railways, and ended by proposing a toast to his guests, particularly the engineers. To the utter disappointment and chagrin of all present the foreign engineers displayed a boorish contempt for etiquette and remained silent. Comment is superfluous.

I intended to write a special description of the Kalgan Railway, but this story can be told best by the Chinese themselves. Some time ago an article on the road appeared in the *World's Chinese Students' Journal* of Shanghai, which we know is authoritative, and worthy of reproduction here. We commend this story to all who are interested in Chinese Railways, as it is an explanation of the sentiment so many people conflict with anti-foreign ideas and reveals a purpose on the part of China to manage her own railway affairs in the future. It follows:

"Of all the railways in China, which have been constructed or are under construction, none has roused more interest or attracted more attention than the Peking-Kalgan Railway. Some of this interest and attention is friendly and sympathetic, but sad to relate people have been not wanting who visit the line with the sole object of 'blowing open the fur to discover the blemishes,' and others for reasons which will be patent to the reader after the perusal of this article, pass sweeping criticisms and make charges without having made careful investigation and without any knowledge of the facts. To the Chinese people generally, the railway is regarded with pride, because it is the first one constructed entirely with Chinese money and by Chinese engineers, there being not a single foreigner employed on the line in any capacity. The successful manner in which the construction work is being carried out is a striking object-lesson of what can be accomplished by our people who have received a technical training, and acts as an incentive to the other lines capitalized and managed by our own people. The limited number of qualified Chinese engineers is, of course, at present a serious drawback, but with the increased number of students who are being trained both at home and abroad, the time is not far when much of the engineering work, which is being undertaken and which will be undertaken, will rightly and properly fall into Chinese hands.

The Peking-Kalgan Line begins at Liutsun, about two miles east of Fengtai, on the Peking-Tientsin Railway, and ends at Kalgan, and is altogether 130 miles in length. The line when completed will connect the capital of China with one of the largest cities in the province of Chihli.

To our own people Kalgan, which is Mongolian and signifies a barrier or gatebeam, is better known under the name of Changchiakou, and is generally associated in their minds with disgraced officials, who sometimes have been compelled to make their temporary residence there by command of the Emperor. The city lies almost due northwest of Peking in the line of the Outer Great Wall, commanding one of the most important passes between China proper and Mongolia, and also the main road of the overland route between China and Russia. Its geographical position is given as in 40° 50′ N. lat and 114° 54′ E. long., and its altitude as 2,810 feet. Like all Chinese towns in the north, the streets are very wide, to allow the passage of numerous mule carts, but Kalgan can also boast of many excellent shops, which bear testimony to its prosperity. Though its population is estimated at only a hundred thousand, the town is important in that it is the seat of an extensive transit trade. Nearly all the tea that is sent to Russia by the overland route goes through this town, and it is a very common sight in the early part of autumn for long lines of camels to arrive from all quarters for the conveyance of tea-chests from the town to Kiakhta. It is estimated that the present traffic between the frontier and China proper alone involves the employment of fifty thousand camels, not to mention the thousands of ponies, mules, donkeys and carts which are also engaged in this great overland trade of North China. The principal merchandise going northward consists of tea and piece goods; while that southward includes fur, hides, camel's hair, Chinese medicines, wool, fruits, etc. Large quantities of soda are manufactured in Kalgan, and when the means of transportation are improved, much of it will no doubt be exported.

THE ENGINEERS WHO BUILT THE KALGAN RAILWAY
H. E. JEME TIEN-YU, DIRECTOR AND CHIEF ENGINEER, IN THE CENTER

(From left to right, seated) YUE YA YO, TSA SUI FOO JEME TIEN YU, NEE TSE YUE, CHENG YING TUNG. *(Standing on right)* CHE CHIH-YUEN. *(Standing on left)* CHUA CHIH-HAO

Owing to its difficulty of access, Kalgan is not very well known to the world, though many Russian merchants have for years established their residences and warehouses just outside the gate. Whith the completion of the railway, travellers will no doubt include the town in their tour.

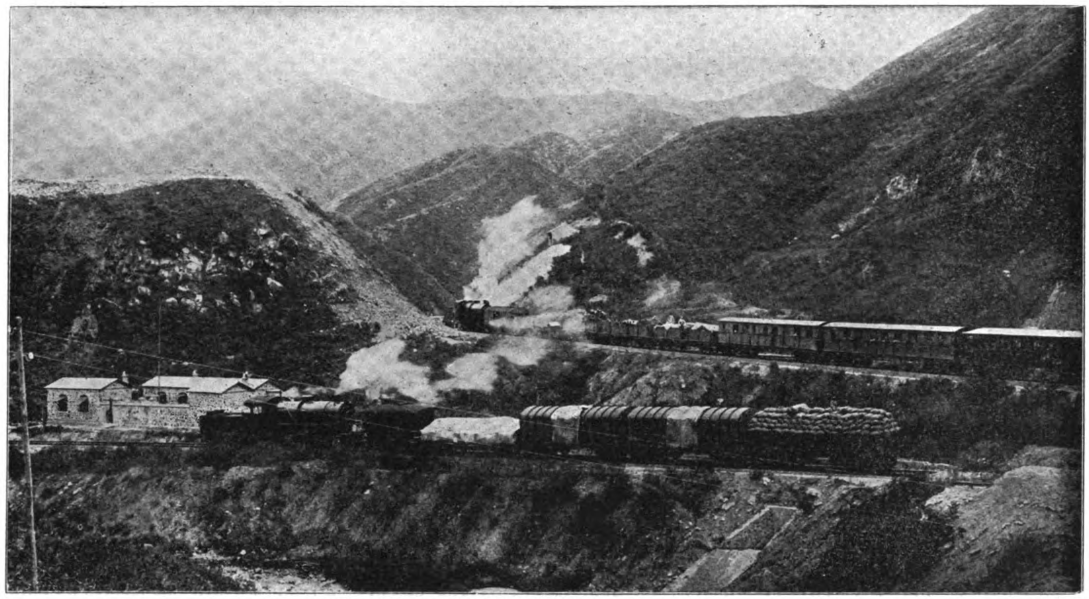
"From the political standpoint, the railway is very important to our Empire, for it will tremendously facilitate communication between Mongolia and China proper. The dependencies of our Empire have been one after another lopped off from their parent country, and Mongolia is one of the very few remaining. Already there are rumors of its falling into the hands of a foreign power, who has been striving with might and main to gain a secure and permanent foothold in that region, and who by wiles and stratagem has been hoping to undermine the loyalty of the tribal chieftains. The railway, which it is hoped will be ultimately extended to Urga (K'urun), and even to Kiakhta, the frontier town, will, by binding as it were the Mongolian dependency and Peking with an iron chain, strengthen beyond power of expression the bond between the two.

"Such being the commercial and political importance of the line, (which is fully realized by the high authorities in Peking, especially by H. E. Yuan Shih-k'ai), several foreign powers tried very hard to secure the concession for its construction. It was a great disappointment to them, when it was announced that the line would be built with a fund to be drawn from the annual surplus of the Imperial Railways of North China, and that the work would be entrusted to Chinese engineers. Jealousy of the accession to power and prominence of our technical men, for whom their Western fellow professionals had entertained suspicion as to their ability, and soreness over the failure on the part of foreign concessionaires to obtain the right and privilege of building the line have been so intense, that at the least rumor telegrams from engineers (foreign) of neighboring railways fly around for information with the unkind hope that the rumour may be verified. Representatives of responsible and respectable corporations have also openly published articles, in which disparaging statements are made of the railway. Many reports of accidents which never happened have appeared in papers, and from all appearances these reports have been disseminated at the instigation of unfriendly parties.

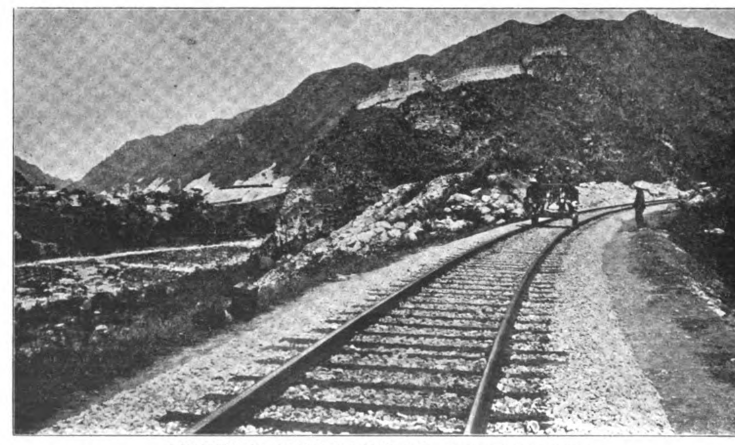
"Let me, however, turn aside from the exposition of such disgusting and unworthy actions, and continue with my description of the work that has been accomplished by our own engineers. The line was surveyed by the Chief Engineer, Taotai Jeme Tien-yow, Ph. B. (Yale University), A.M.I.C.E. (London), an account of whom appeared in the last number of the *Journal* and his staff in the summer of 1905, and the construction began in the latter part of October of the same year. The estimated cost of the whole line is Tls. 7,286,660, which is very low indeed, considering the engineering difficulties in the Nankow Pass, and at Kimingyih, which will be described in the latter part of the article.

"As I have already intimated, there is not a single foreigner employed in any capacity; the resident engineers, of whom there are four, the two assistant engineers, and the numerous student engineers are all Chinese. In the traffic department also, all the employees, from the Traffic Manager, the station masters, down to engine-drivers and guards, are Chinese, and since the opening of the first section in October of last year to traffic, the trains have been running in clockwise schedule six times a day without a single mishap, thus proving conclusively that our people are able not only to build a railway, but also to run it successfully. The policy of certain lines under foreign management to import and employ foreign unskilled labor, especially Indians, as guards, linemen, flagmen, etc., is certainly an indefensible one, and in thus crowding out our own countrymen from positions to which they have legitimately and naturally the first claim, will gain for themselves the odium and antagonism of all classes.

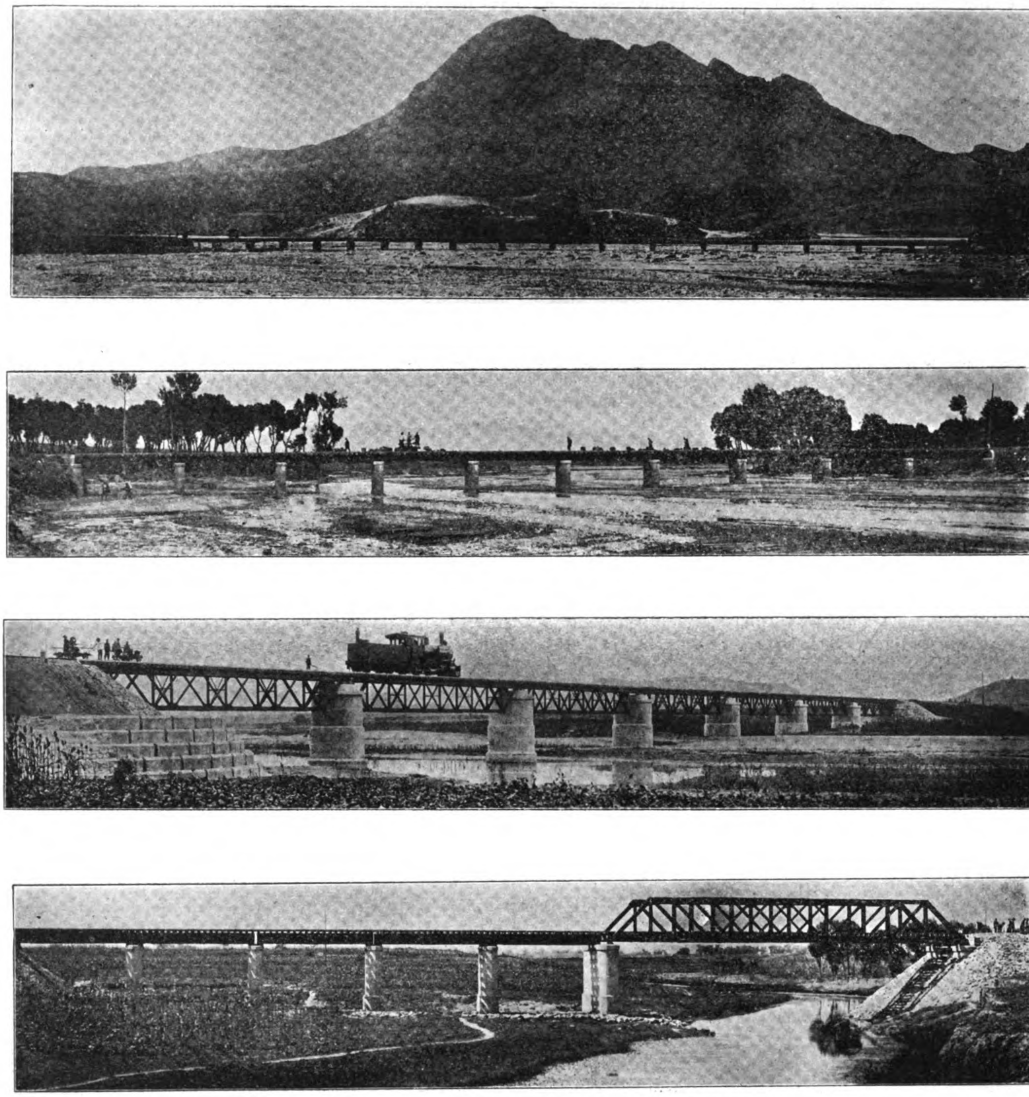
"The first of the four divisions, which has been opened to traffic, is 32 miles long, beginning at Liutsun and ending at Nankow at the mouth



PEKING-KALGAN RAILWAY.—IN THE MOUNTAINS



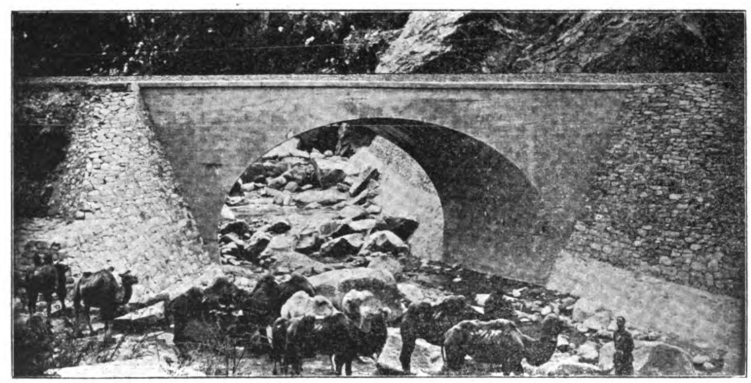
PEKING-KALGAN RAILWAY.—THE GREAT WALL



PEKING KALGAN RAILWAY.—TYPES OF BRIDGES

of the Pass. The construction commenced in October, 1905, and within the short space of nine months, the construction train reached the Pass. The formal opening took place on the 30th of September, 1906, and many guests, both foreign and Chinese, proceeded to Nankow to witness the ceremonies. The late H. E. Hu Yu-fen, Vice-President of the Ministry of Posts and Communications, presided at the function, and Taotai Jeme Tien-yow made a speech in English, in which he cursorily delineated the work accomplished and gave a sketch of what remained to be done. He ended by proposing a toast to the guests, particularly to the engineers of sister railways, but to the utter astonishment and disappointment of all no one responded, though several foreign engineers were present. Many high metropolitan officials came to show their interest and pride in the line.

"Starting from Liutsun, a traveller on the Peking-Kalgan Railway would traverse through fields covered with dense growth of *kaoliang*, till his field of view suddenly expands as the massive and well-preserved walls of Peking



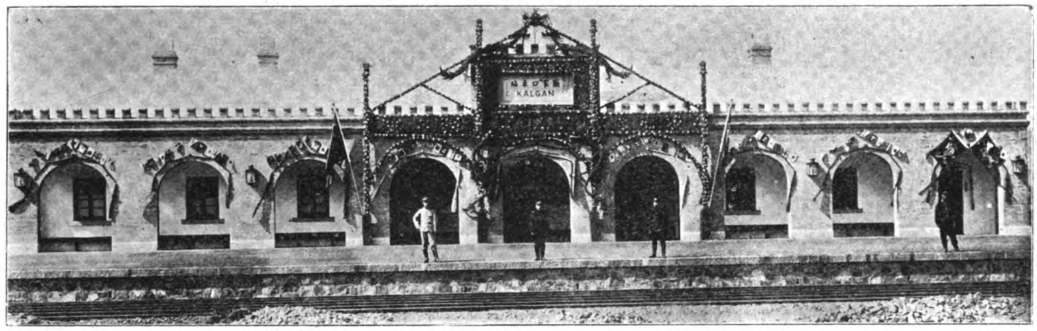
PERING-KALGAN RAILWAY.—CONCRETE ARCH BRIDGE ACROSS MOUNTAIN STREAM

gradually come into sight. Hugging closely the city wall, the train reaches the first station, Kuanganmen, which is not an important stopping place. Still following the direction of the city wall, the train next makes a stop at Hsichihmen, one of the busiest gateways of the capital, for it is the one Their Majesties the Empress Dowager and the Emperor frequently pass through on their journey to and from Eho Park. For a large part of the year metropolitan and provincial officials may be seen in carriages or the humbler mule carts wending their way through the gate and on the

17 drains, aggregating 1,352 feet (linear) of openings. All the bridges are constructed of concrete, and it is hardly necessary to add they are all well-made and of a lasting character. In fact, it may be asserted that there is nothing of a temporary character about anything on the line. People in this world, however, very often associate exorbitant prices with good quality, and low prices with poor quality of materials and workmanship, believing in their simplicity that they are inseparable concomitants, but the attention of my readers is called to the low price paid in this division for earth-

their privilege by subletting and re-subletting their contracts, a system of 'squeezing' which has rendered engineering work so expensive in other parts of China. Nor are there interpreters of the character as has been reported elsewhere who receive Tls. 50 per mensem and retire after a year or so with half a lakh. There is not a *single* interpreter on the line, for they are not needed, and the absence of middlemen results in economy, unattainable in the nature of things where the personnel and the system are not similar.

"Along the 32 miles of this division, there are



PEKING-KALGAN RAILWAY.—STATION AT KALGAN

magnificent macadamized road leading to Eho-yuan. From Hsichihmen onward, the railway gradually strikes away from Peking and makes for the open country, where the scenery is quietly pretty. As one approaches Chingho, the next station, hills which had appeared in the dim distance on the left now come closely into view, and Wanshoushan, the summer home of Their Majesties, with its glittering towers and shining roofs, is pointed out, nestling in the valley of the nearer hills. Officials proceeding to Eho-yuan sometimes take the train as far as this station, and then proceed by sedan chairs to their destination.

"At Shaho the train crosses the principal bridge of this division,—a really magnificent structure, consisting of five spans of 30 feet each and one of 110 feet. The steel superstructure of this bridge as well as of other bridges, with the exception of the 110 feet span which was made in England, is supplied by the Shanhaikuan Bridge Works. Mr Kwong, the present chief engineer of the Canton-Hankow Railway, was in charge of this division and to him much of the credit for the splendid work in this division is due. From Shaho onward the ground begins to rise imperceptibly, and the grade gets higher and higher as the train approaches Nankow, the last station before entering the famous Pass. The line describes a tremendous curve just before reaching the station, thus enabling the traveller to sweep his eyes over the stretch of country just traversed by him. The village or town of Nankow, which is situated almost exactly at the mouth of the Pass, is separated only by about half a mile from the station, and no doubt from now on it will begin to grow towards it, as traffic increases in the near future. What with the buildings already constructed round about the station for railway employees, the sheds for locomotives, the embryo machine shop, under the charge of a competent and experienced Chinese mechanical engineer, and other buildings rapidly springing up, the place already looks quite populous and respectably busy. Speaking of the machine shop, let me add that repairs, alterations, and improvements of all kinds are made here, and it is hoped in the near future, the sphere of work will be greatly extended and facilities provided so that even cars may be constructed. At present, however, besides the services enumerated above, the machine shop is also greatly useful in making iron castings right on the spot.

Turning to the more technical side of the work accomplished in this division, I was informed that there are altogether 21 bridges and

work and materials, which has enabled the construction of a first class line at an unusually reasonable rate. For earthwork at the Liutsun end, it averages only 17 cents per fong, or, expressed in another way, 4 cents per cubic yard. At the Nankow end, where high embankments have to be made out of boulders, the average price is 27 cents per fong. Prices just as reasonable and low are charged for broken stones for concrete which varies from $1.20 to $2.00 per fong delivered on the spot, and sand, when collected locally, costs only the ridiculously low price of 30 cents per fong. The explanation is not far to seek, for on the Peking-Kalgan Railway, all these materials are supplied to the engineers *directly* by petty contractors and there is, therefore, no opportunity for big contractors to monopolize the tenders and abuse

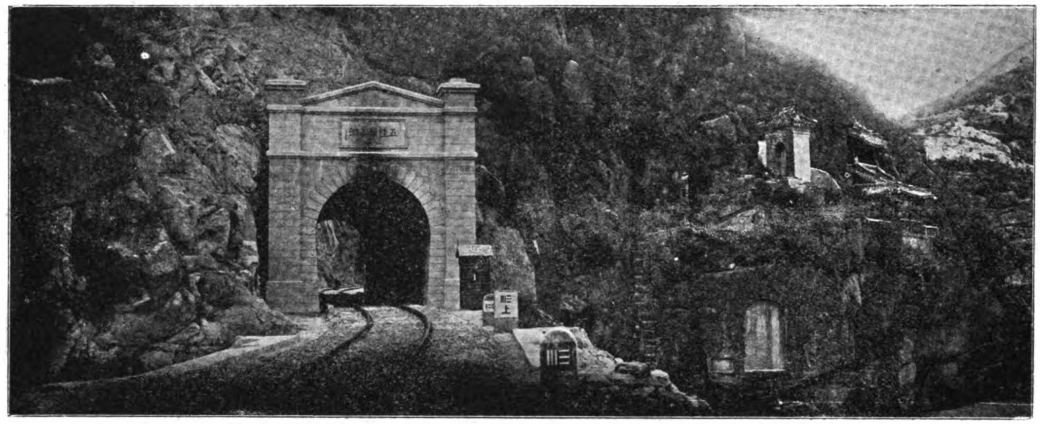
3 water-tank houses, 6 foreman's quarters, 18 plate-layer's cabins, 2 engine sheds, 2 locomotive stores, 1 machine shop already referred to above, 1 turntable and 2 coaling stations. All the structures are built upon modern principles, and the architecture, a very simple but pleasing one, conforms to the adopted type of this railway. Employees are provided with comfortable quarters near the stations, for which they pay a reasonable rent, and altogether there are nine groups of these. For the engineers and the railway police, special buildings are being erected; nor are tourists forgotten, for a hotel with excellent accommodations is provided by the railway. To those of our readers unacquainted with Peking and its vicinity, I may say here that Nankow has been for years the stopping place of tourists, who desire to

PEKING-KALGAN RAILWAY.—UNDER THE GREAT WALL

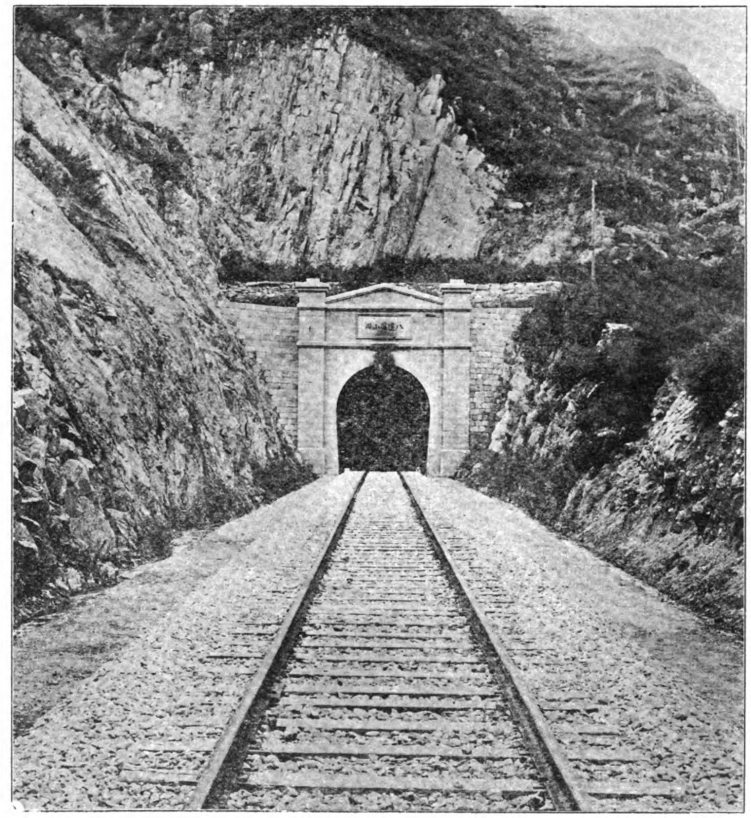
visit the Inner Great Wall at the northern end of the Pass or the Ming Tombs, a trip to either of which can be comfortably made from the town in one day Up to the present visitors have been compelled to be satisfied with the disagreeable and uncomfortable quarters of a third class Chinese inn, bringing with them their own food and drink. With the construction of the railway, not only the two days' dreary and jolting journey from Peking in a mule cart, with all its attendant misery, especially in inclement weather, is done away with, but the traveller finds on his arrival at Nankow after the pleasant ride on the train all the comforts and even luxuries of a modern hotel awaiting him. Our people have not acquired the science of attracting and of catering to tourists as our neighbours the Japanese have done, but I hope the examples set by this railway will be adopted by the other lines, so as to enable travellers to see some of the historical and beautiful spots of our country instead of leaving China with the impression that all there is of her are the few treaty ports.

"As to rolling stock, the engines in use now were bought from the Imperial Railways of North China. Special engines, the Mallet Compound Articulated, have however been ordered from England, and will arrive shortly to be used for working trains for the steep grades of the Pass. Japanese sleepers are used on account of their reasonable price, but in the Nankow Pass, in view of the heavy grades, special creosoted sleepers are employed with provisions towards the prevention of creeping of the rails. The rails on the main line are 85 lbs. Sanbergs; for sidings and branch lines 60 lbs. rails are employed. The whole line is of uniform standard gauge. All freight cars, both open and covered, are of 30 ton capacity, with wheels on bogies to insure easy running on sharp curves. In accordance with the system generally adopted by railways in China, first and second class passengers travel in composite cars, and the third class cars are covered, with benches along the sides. In spite of the fact that only a fourth of the whole line has been completed, and that Nankow is an unimportant town in itself the receipts amount to $10,000 a month.

"When the construction of the line was first proposed, many people believed that the Nankow Pass would present difficulties insuperable from the engineer's standpoint, and to those who have visited the Pass on their pilgrimage to the Great Wall the assertion did not sound unreasonable. The ground has a rise of 1,800 feet within the short distance of 10½ miles as far as Pataling, whence it goes down grade again. The narrowness of the Pass precludes the employment of curves with length of an radius. Our Chinese engineers are, however, firm believers of the old adage, 'Where there is a will, there's a way,' and so the Resident Engineer of this section was despatched there early to make an exhaustive survey, with the view of securing the best route with the lowest grades. Some idea of the pains taken and the physical and mental labor undergone can be formed by the reader when I say that no fewer than five distinct lines were surveyed, and finally the best one from every point of view was selected. Generally speaking, the railway follows closely the great highway, which has existed for hundreds of years, but once in a while it disappears in tunnels, short ones at first, to emerge again into the open till Pataling (the highest point of the Pass, where the Great Wall is seen to its best advantage), when the last and longest tunnel is reached, and this time the track does not appear again till about a quarter of a mile beyond the Wall.



PEKING-KALGAN RAILWAY.—SHORT TUNNEL



PEKING-KALGAN RAILWAY.— ENTRANCE TO PATALING TUNNEL

"In the Pass the cut and fill amount to 150,000 and 300,000 fongs respectively, the labor costing about $450,000, or an average of $1 per fong of cut or fill. Half the cut is through solid rock and fills are made by cutting down the hill-sides. The maximum cut is 80 feet and the highest fill is 65 feet. There are four tunnels, the lengths of which are 1,200 feet, 150 feet, 450 feet, and 3,570 feet respectively. The first one pierces the limestone region near the historical spot, Chuyungkuan, where is situated the famous white stone gateway, carved all over with figures of human beings and animals and in the archway with characters in Chinese, Mongol, etc. Here, according to the novelist, Yang Yen-chao, a famous general of the Sung dynasty was stationed, his headquarters being the White Tiger Hall.

"The driving of the tunnel occupied the space of six months, the slowness being explained by the fact that all the work was done by hand labor. The accuracy of the work was tested when the two ends met. In line, it was exact, and the length has an error of a few inches. The second and third tunnels, though driven through granite, have been finished and lined, the work having been accomplished without any difficulty whatever.

"The fourth tunnel, the longest one existing in China, occupies a romantic situation, for it runs 243 feet below the Great Wall at Pataling, the northern gateway to the Pass. Again, the engineer finds facing him granite and hardpan, which abound in this region. To quicken work, a shaft ninety feet deep was sunk about halfway so as to enable the workmen to drive from four ends instead of two. This shaft is lined with cut stone, and will be retained afterwards for the purpose of ventilation. Near the north end of the tunnel a temporary air shaft forty feet deep was driven. In the work of driving, in addition to hand labor, one set of Schram drilling machines is used, and for ventilation, a 48″ Musgrave fan, bought through Messrs. John Birch and Co., London, was installed at the shaft. Chinese wind-boxes used at the two ends have been found to be very serviceable. For hoisting water, a double winding machine which works by an automatic filling water drum, is set up at the shaft, and the blasted material is lifted in special cars by means of a cage. All but 900 feet has been driven, which is marvellously quick work, considering that operations in this section did not commence till March of last year, and the whole tunnel will be ready and lined before next summer. The thoroughness of the work is evinced by the fact that all the tunnels will be lined throughout to prevent any possible accident, and for the arch, concrete blocks will be made use of. Finally, cut stone portals will add to the neatness of the tunnels.

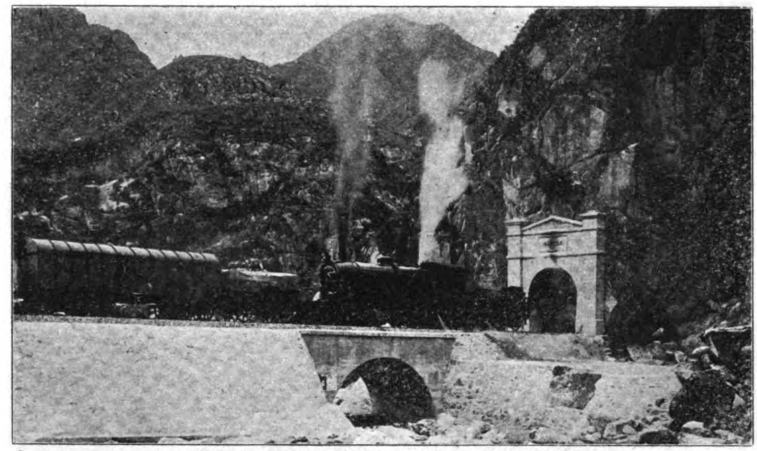
"One can appreciate the nature of the undertaking in the Pass better, when he is informed that for five miles of the ten and a half, the grade rises at the rate of 1 in 30, that is, for every thirty linear feet traversed by the line, it rises one foot in altitude. Within the Pass, there will be 45 curves. For those of short radius, transition curves, formulas for which are being developed by the Chief Engineer, will be used. There will be also 19 bridges and 36 drains. With a few exceptions the former consist of concrete arches, the largest of which is of 40 feet span on a skew of 45 degrees and 65 feet high.

The railroad has already been extended to Chuyungkuan, and trains will travel through the Pass as soon as the Pataling tunnel is completed.

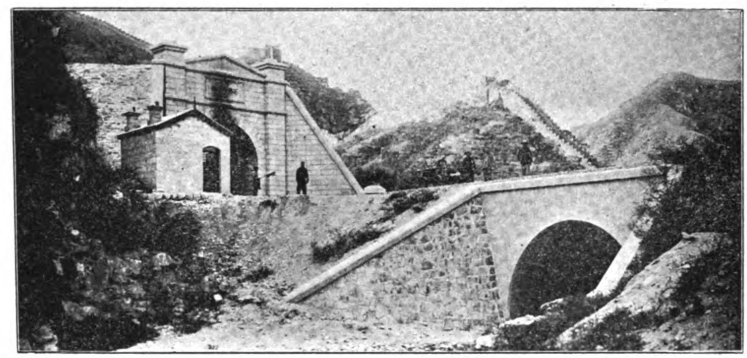
"It is not necessary to weary the reader with a lengthened account of the third and fourth divisions, on the former of which work has just commenced. Suffice it to say that the third division is 38 miles long, extending from Chatao to Kimingyih, and requires the construction of 17 bridges and 32 drains, aggregating 2662 linear feet of openings. The principal engineering feature will be the bridge at Huilaihsien, which will consist of ten 100 feet deck spans. The fourth and last division begins at Kimingyih and ends at Kalgan, again a distance of 38 miles. The engineering difficulties in this division rival those of the Nankow Pass. At Hsiangshuipo, 165 chains [*i.e.* 16,500 feet] of granite and sandstone will have to be cut through, along the edge of the steep bank of the Yangho, which is the upper course of the Yungtingho, the cut varying from ten feet to eighty-five feet deep. The openings amount to 2075 linear feet, consisting of 21 bridges and 130 drains.

"At Kimingyih, the railway is operating a coal mine bought from the country people. At present the attention of the mining engineer in charge (a Chinese who qualified for his profession in both England and America) is directed to the introduction of the latest Western improvements and the driving of new shafts and drifts. Machinery, for both winding and drilling, has been transported at tremendous labor to the spot and installed, and it is expected that within a year coal will be forthcoming.

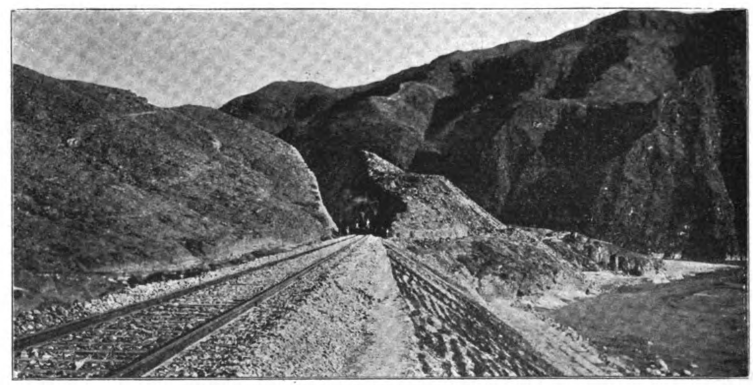
"The branch line to Mentoukou, a distance of 15 miles, is also under construction. The economy of the line is again demonstrated by the fact that the embankment amounting to 100,000 fongs was contracted for about 14 cents per fong. The branch line is to connect the well-known coal-fields with the capital. There is one bridge of some importance, namely, the one across the Hunho, which consists of eight 100 feet spans. The railway hopes to do a thriving business on this short line, running as many as forty 20 ton cars every day to convey the freight, which will consist of hard coal, lime and broken stones for road building.



KALGAN RAILWAY.—TUNNEL ENTRANCE

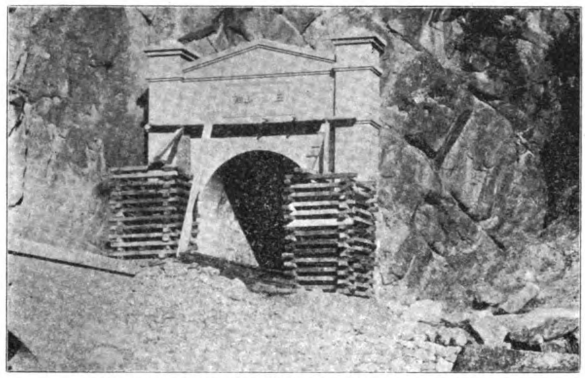


KALGAN RAILWAY.—THE TUNNEL UNDER THE GREAT WALL

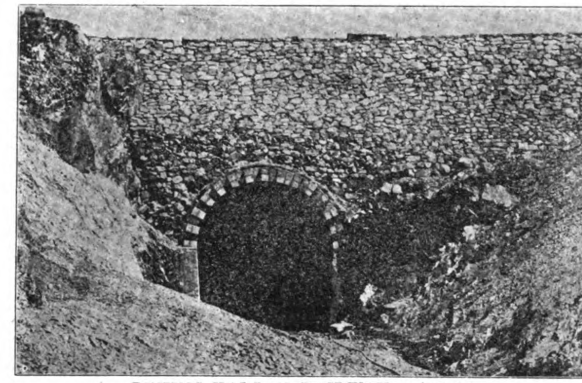


PEKING-KALGAN RAILWAY.—CUT AND FILL

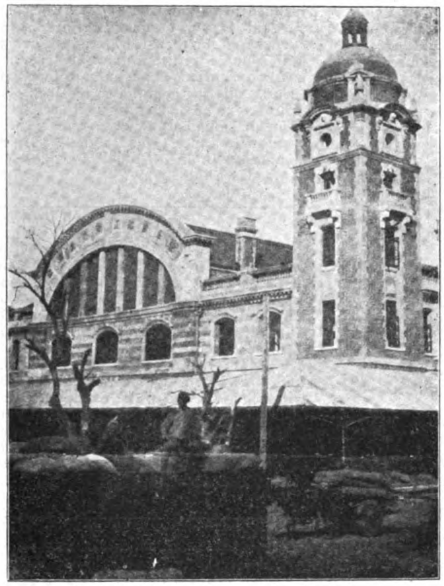
PEKING-KALGAN RAILWAY.—HIGHEST POINT NANKOW PASS, PEKING



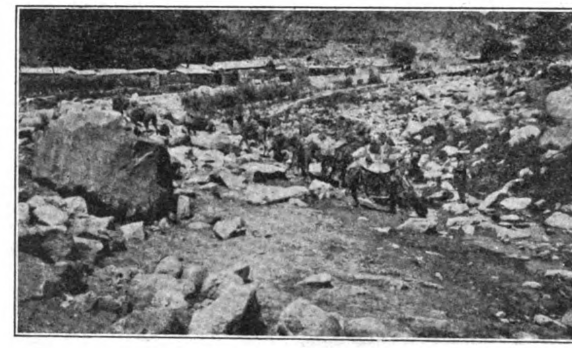
PEKING-KALGAN RAILWAY.—TUNNEL ENTRANCE



PEKING-KALGAN RAILWAY.—TUNNEL



I. R. N. C.—NEW STATION AT PEKING



PEKING-KALGAN RAILWAY.—TUNNEL OPENINGS

CHEKIANG RAILWAY.—THE ENGINEER'S OFFICE AT HANGCHOW, ON THE HILL. FREIGHT DEPOT TO RIGHT

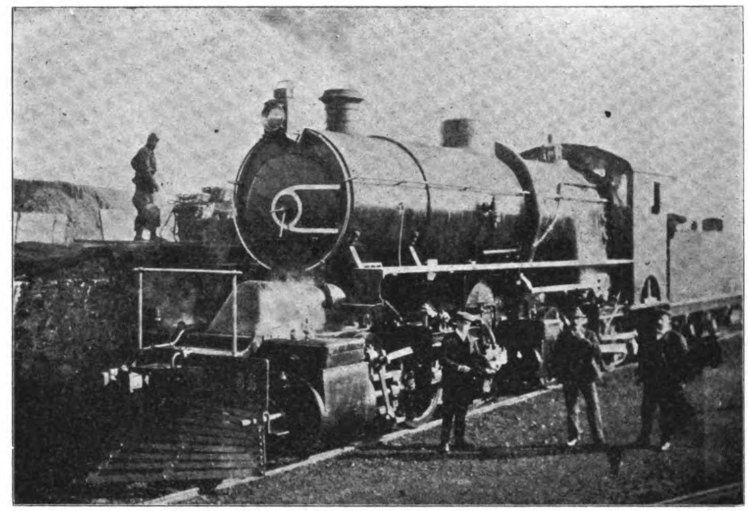
CAMELS AT NANKOW PASS

"The whole line to Kalgan will be completed in 1910 or even earlier, and it is the intention of the Chief Engineer to construct the termina at Kalgan on a grand scale.

"In concluding this brief and inadequate description of the Peking-Kalgan Railway, let me call the attention of the reader to the principal features of the line, features which render it conspicuous and distinct from the other lines in China. In the first place, there are no foreigners employed. This in itself should be and is a matter of national pride, but were our engineers unable to fulfill the demands of their profession, it would perhaps be a better arrangement to utilize foreign technical skill. In the present instance, however, there can be no question whatever that all the work of construction is carried out in good engineer like manner. The materials used are of the best quality, while the structures bear nothing of the temporary character about them. To one who has travelled on the line, it is evident that the buildings too are of first class masonry.

"The second point is the rapidity of the construction. Within the short period of nine months, and it must be remembered that in the north of China three months in winter are frozen and no concreting can be done during those months, the construction train reached Nankow, a distance of 32 miles.

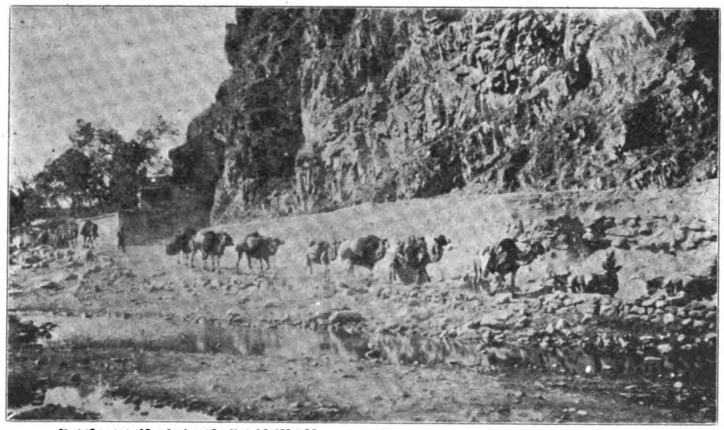
"In the construction of a railway, economy, which must not be confounded with cheapness, must always be kept in view. All railways which have been built and are being built in China must be paid for by our people, and our people are poor. A railway line is not a club house or a private mansion, upon which the owner or owners may expend millions merely for the gratification of their sense of beauty or for the exhibition of their degree of wealth, but is a commercial investment. The amount of capital sunk in it must be commensurate to its power of paying dividends, and in the case of Chinese railways the redemption of the bonds must not for a moment be forgotten. Economy on the Peking-Kalgan Railway has been reduced almost to a science. There is no temptation to spend money recklessly, as no five per cent. commission on every tael spent can enrich the coffers of any corporation. There is no



PEKING-KALGAN RAILWAY.—MALLET TYPE LOCOMOTIVE FROM NORTH BRITISH LOCOMOTIVE COMPANY

the prices of materials explain in a large part why a railway built under our own supervision and by our own engineers is so very much more economical.

"Another very important advantage gained is the peaceful condition of coolies during construction, due to the absence of misunderstanding between engineers, the coolies, and the country people. No disturbance of any kind, still less of any rioting, has ever happened, and the work has proceeded so smoothly and quietly that the local officials are never called upon to suppress disorders or punish offenders. There can be no unpleasantness arising through the interference of foreign consuls and the referring



PEKING-KALGAN RAILWAY.—CAMELS BRINGING IN RAILWAY SUPPLIES

temptation to spend recklessly so as to necessitate the floating of another 'loan,' in which the Chinese Government receives Tls. 93, and the bondholders pay to the floaters Tls. 116. There are no engineers who must have foreign style residences, cement tennis courts, ice-making machines, palatial house-boats, and princely salaries before beginning work. There are no interpreters to browbeat the contractors, to make trouble with the local officials, and to make a pile in little or no time. All contractors deal with the engineers directly, and no squeeze system exists. The figures already given for

of insignificant incidents to the Ministers in Peking. One and all understand that the railway is a Chinese railway, that our own money is being spent, that the coolies are our own people, though they are coolies, that our officials are officials appointed by the Emperor, and the result is the work proceeds without a hitch of any kind.

"One should think that with Government patronage and official supervision, there could be no strict honesty, that graft, more or less, must penetrate the transactions. Wonderful to say, on this line nepotism is unknown all employees are rated according to their qualifications, no matter whether a man comes with a recommendation from a Prince or no, and all contracts are by competitive tenders. Indeed, spies, employed by interested or unfriendly parties, are so keenly on the watch that nothing crooked could escape their eyes and be not immediately exposed, were those in charge inclined to be crooked.

"And lastly, student engineers are much encouraged for their work, and receive considerate treatment from their teachers. Steady and conscientious application of their knowledge (nearly all of them have received theoretical training in the engineering department of Tientsin University or elsewhere) ensures rapid promotions and good salaries. Their future is assured, for the demand of Chinese engineers is far above the supply."

FOR SALE

Patent Slip supplied to H. H. The Rajah of Sarawak by Messrs. Day Summers & Co., Ltd., of the Northam Ironworks, Southampton, England, for sale f.o.b. Kuching, Sarawak. The Slipway has never been erected and was designed to take a vessel of a total displacement of 570 tons, 44′ 6″ over paddle boxes, 175 ft. long drawing, 1′ 1½″. All complete including winding gear and rails, except for the boiler and can be seen lying here. Full particulars will be supplied to any bona fide enquirer on application being made to the undersigned.— H. F. CAREW-GIBSON, *Commissioner of Public Works and Surveys.*

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TIENTSIN-PUKOW RAILWAY

(Southern Section)

Although work on the Northern Section of this Railway has been progressing at a favorable rate, the same can hardly be said of the Southern Section. Various reasons have been advanced from time to time in explanation by both British and Chinese officials, and the idea allowed to gain ground that the work has been retarded owing to the lack of harmonious relations between the Managing Director, Taotai K. S. Low, and the British Chief Engineer, Mr. T. W. Tuckey, with the burden of censure on the former official. The representatives of the British and Chinese Corporation at Peking, and the *London Times* criticized the state of affairs, reflecting on the capacity of the Chinese Director, and comment in Shanghai and the treaty ports naturally followed this lead. It is entirely natural and perhaps justifiable for some to shift all responsibility for delays and friction on to the shoulders of the Chinese official, as the world is generally ready to accept such a view, owing to the natural leaning of the race towards obstruction and procrastination. But in this particular instance it is safe to state that the reverse is true, and such delays and discords which have arisen, are traceable directly to the fact that the foreigner has attempted to overstep the terms of the Loan Agreement, and the Chinese managing director has assumed an inflexible attitude in defending the interests confided to his charge. For once China's interests are entrusted to an official peculiarly equipped to act intelligently and safeguard her rights. In Taotai K. S. Low, China has selected the best man in the Empire for the post of managing director of a railway. Educated in America in the early eighties, he graduated as a civil engineer from the Troy Polytechnic, and since returning to his native land his services have been in constant demand for railway work. He was one of the party who made the original surveys for the Pekin-Hankow and the Canton-Hankow Railways; he assisted in building the Pinghsian Colliery Road, was railway expert to Sheng Kungpao, surveyed the Kirin Railway, and was first chief engineer to the Chekiang Railway Co., where, had his advice been acted on, it would have saved the directorate much adverse criticism. With Taotai Jeme Tien yu, the builder of the Peking-Kalgan Road, Taotai Low shares the honor of being the best native engineer in China. With an enviable record for probity and capacity it was clear at the outset that such an official would hew close to the terms of the Agreement, and insist on its being carried out to the letter. Although the British and Chinese Corporation had undoubtedly constructed a thoroughly first class road in every respect from Shanghai to Nanking, the Chinese hold to the opinion that conditions did not warrant such a heavy expenditure, and in the future, instead of permitting the foreign engineer absolute control of purchases, the tendency towards extravagance would be checked by the control being placed under the Chinese managing director. It is not my purpose to enter into any discussion as to the merits of the above contention, which is simply stated as a fact, which actuated the Imperial Government, in stipulating that financial control would be in their own hands in the construction of the Tientsin-Puokw Road.

The lack of harmony or friction between the high officials of the road, advanced by British papers as an excuse for the delay, is largely attributable to the failure of the British Engineer to accept the terms of the Loan Agreement, as interpreted by the managing director. The authorities on the Northern Section had arrived at an amicable adjustment of their relations to each other, and the German chief engineer was recognized as the supreme authority, not only in the technical but accounting departments. Mr. Dorpmuller was the acknowledged head of all foreign engineers, accountants and secretaries and their contracts with the railway authorities recognized him on an equal footing with the managing director.

Herein the administration of the Northern Section practically nullified the terms of the Loan Agreement which China took such pains to conclude, not only for the protection of her own interests, but those of the other side as well. According to Article 17 of this agreement, although the services of the chief engineer are engaged for the supervision of construction, he is under the orders of the managing director, and has to carry out the wishes of the latter as to the general plan of the road. The managing director under the conditions of the Agreement is the superior and his special functions are the administration of the funds and supervision of all purely Chinese matters. If this control is shared by the chief engineer, it relegates the director to a back seat and opens the way for graft in many forms or at the least to extravagance in construction, which the Chinese government was specially desirous to obviate. As the sole responsibility for the funds is charged to the director, any participation by the engineer in their control, while disclaiming participation in responsibility, would react seriously on his official colleague, and any attempt to share such control would necessarily be resented by an official jealous of his record and reputation.

The scandals attached to the Northern Section of the road are too recent an occurrence for me to enlarge on here, but it is well to bear them in mind in arriving at a correct estimate of the situation on the Southern end.

Under the terms of the loan agreement the powers of the managing director are derived from the director general and he is held solely responsible for the funds and the accounting. As it was impossible for him to do this work himself thes ervices of a competent foreigner was sought and at the same time the post of private secretary to the managing director was also to be filled. The latter requested the chief engineer to use his good offices and assist him in securing these men and through his influence the present accountant was brought out from India and the chief secretary from England. And from this point dates the friction between the officials. The chief engineer insisted that these men—the accountant who was to supervise the accounts for the Managing Director, and the one who was to act as his chief secretary—must sign the agreement recognizing him as equal in authority in their departments as the managing director. Taotai Low refused to accept such interference in his department and to this difference of opinion is due all subsequent friction. The attitude of the chief engineer, in plainer words, would reduce his superior to the position of an inferior and cancel his authority in his own department. Mr. Tuckey's insistance on this point naturally created an issue which had to be submitted to Peking for adjustment, and under the terms of the Loan Agreement all such questions were to be decided by the director general. The managing director transmitted his papers in due form to the recognized authority, but the chief engineer took his case over the head of the director general to the British Minister at Peking and to the representative of the British and Chinese Corporation. This breach of official etiquette, reflecting on the fairness of the director general, only helped to intensify the ill feeling on both sides. The final decision of the authorities at Peking, fully supported Taotai Low, and the attempts to shoulder on him the responsibility for lack of harmony and delay in construction is not justified by the facts, and in all fairness to a capable official such reports should be corrected. Taotai Low has conscientiously endeavored to administer his office in strict compliance with the terms of the Agreement, and while it cannot be urged that there was any ulterior motives on the part of the engineer in forcing the issue, other than a natural desire for power, his action if successful would have effectively nullified the Agreement and opened the way towards "graft" and extravagance. In view of the scandals attached to the northern section of the road where the chief engineer shared the control of the accounts with the Director, Taotai Low's stand is worthy of the highest commendation from all parties as it effectively precludes a repetition of the graft charges at Tientsin and preserves the good name of the Chinese government and the British and Chinese Corporation from any taint of corruption, however ill founded. If scandals arise in the future there is only one responsible party and the British interests may well feel grateful to the Chinese director who has effectively insured them from any suspicion of graft by assuming all responsibility and refusing to acknowledge the pretensions of the engineer to joint control of the accounts. The road when completed may not be up to the highest British standards as typified in China by the Shanghai-Nanking line, but it will have the merit of satisfying the Chinese idea of economy which may mean more for the sucess of British railway principles than an abnormal temporary profit.

As far as I am able to gather from all reliable sources, the persistent criticisms directed against Taotai Low arise from his uncompromising attitude in rigidly enforcing the stipulations of the Loan Agreement without regard for favored parties, thus fully protecting himself from any taint or suspicion of scandal. His most bitter critics, those who have been unsuccessful in securing contracts, all concede his probity and honesty. The full text of Article 18 of the T. P. R. Loan Agreement reads as follows:

"For the Northern and Southern Sections of the Railway, respectively, the Deutsch-Asiatische Bank and the Chinese Central Railways Limited will act as agents of the Railway Administration during construction for the purchase of all materials, plant and goods required to be imported from abroad. For all important purchases of such materials tenders shall be called for by the managing director in the case of all tenders, indents and orders for the importation of goods and materials from abroad, the said agents shall purchase the materials required on the terms most advantageous to the railway and shall charge the original net cost of the same plus a commission of five (5) per cent. It is understood that no orders for materials shall be executed or any expenditure incurred without due authorization by the managing director.

"In return for payment of commission as above stated, the Deutsch-Asiatische Bank and Chinese Central Railways Limited as agents within their respective sections shall be prepared to superintend the purchase of all foreign materials required for the construction and equipment of the railway, which shall be purchased in the open market at the lowest rate obtainable, it being understood that all such materials shall be of good and satisfactory quality, and that the railway administration shall have the right to reject on arrival in China materials which do not come up to specifications. At equal rates and qualities goods of German and British manufacture shall be given preference over other goods of foreign origin for the Northern and Southern sections respectively. The railway administration reserves the right, while paying the above stipulated commission to the said agents in respect of all purchases of foreign materials, to avail itself of the services of other agents in China or abroad should it see fit to do so.

"Original invoices and inspectors' certificates are to be submitted to the Managing Director; and all purchases made by the agents on behalf of the Railway shall be supported by manufacturers' original invoices and inspectors' certificates.

"No commission shall be paid to the agents except as above provided; but it is understood that the railway administration shall provide out of railway funds for the remuneration of consulting engineers whenever their services are engaged.

"With a view to encouragement of Chinese industries, preference will be given at equal

prices and qualities, over British, German or other foreign goods to Chinese materials and goods manufactured in China. No commission will be paid on purchases of such materials and goods.

"It is understood and agreed that after the construction of the line is completed the Deutsch Asiatische Bank and the Chinese Central Railway Limited, within their respective sections, will be given the preference for such business, during the currency of the Loan, for the supply of foreign materials as the railway administration may require, on terms to be hereafter mutually agreed upon."

The above terms concede to the Chinese Central Railways, Ltd., or their official agents, a commission of 5% on all goods purchased or imported from abroad and all accounts must be certified to by original manufacturers invoices and inspectors' certificates. This provision was made to protect the railway from the excessive charges of goods purchased in the local market to which the agents' 5% commission would also be added. A slight misunderstanding as to the correct application of these provisions to an indent marked urgent, and which were purchased in the local market, arose between the managing director and the agents of the Chinese Central Railways which for a time also tended to foster the bitter feeling, but in justice to Taotai Low it is only fair to state that as soon as the matter was brought to the attention of the head of the house, he recognized the untenable position into which his firm had unwittingly been placed by an over zealous junior assistant, and promptly made all proper amends for the error.

"*At equal rates and qualities* goods of German and British manufacture shall be given preference over other goods of foreign origin for the Northern and Southern Sections respectively"..... "With a view to encouragement of Chinese industries, preference will be given at equal prices and qualities to Chinese materials and goods manufactured in China. No commission will be paid on purchases of such materials and goods."

The above stipulations of the Loan Agreement allow room for considerable scope of judgment in ordering material. At equal rates and qualities goods of British and German manufacture shall be given preference. If goods of other foreign make equal in quality and lower in cost are offered it permits of their acceptance and purchase, and in the interpretation of these words considerable ill feeling has been engendered. On the Northern end, under Teutonic influence, there has never been any question as to what goods were of the highest quality. Even the nails proceed from Germany. Cars, locomotives, rails, bridges and all other supplies were secured from Germany. With a German chief engineer, participating in the control of the accounts and enjoying the most harmonious relations with the Managing Director, any goods of German make were superior to the best foreign makes and no other nation had a look in at the contracts. It is alleged that this complete harmony in the working of the Northern Section is responsible for the fact that in some instances the goods were on the way to China from Germany at the time tenders were publicly invited in Tientsin. It is natural that a German engineer working in complete accord with the managing director should stipulate the purchase of German materials as the best for the road, and although other foreign goods might be cheaper, he would insist that the quality was very inferior therefore could not be considered and the managing director, guided by his superior technical knowledge, would so award the contracts. But the managing director of the Northern Section has lost his job and dragged down his superior director-general with him, giving harmonious relations a black eye in China. Germany has been thus placed in an awkward position. In the vernacular of the West, she is "buffaloed." To admit collusion between the German chief engineer and the disgraced managing director is of course impossible or she must concede the fact that the much vaunted Pukow terms fail to insure honesty when applied to German loans, and to admit this she simply strengthens the argument of British financiers that Pukow terms fall short of safeguarding the interests of the investor.

But on the Southern Section, where harmonious relations have not obtained, Pukow terms are working out successfully to the credit of the Chinese government and the salvation of British endeavors. The situation is almost identical. The British chief engineer is patriotic to the core. It is quite impossible for the best foreign equipment to equal in quality the worst British make, therefore British goods are always recommended for purchase even at a higher rate. But the managing director who holds the purse strings is also patriotic and loyal to his charge, and, in addition, is a highly qualified railway engineer himself. It is difficult to accept the dictum of the chief engineer that British goods are the best and should be ordered when Continental and American manufacturers of world wide reputation bidding on the same tender, under identical specifications, are greatly lower in price. So it happens that the lack of harmonious relations, while reducing the total aggregate of British sales to the railway, effects economy for the Chinese government who is, after all, paying the bills. While conceding in a friendly spirit the bulk of the orders to British firms, some business has also been placed with the lower tenderers of other countries. Of the ten locomotives, eight were ordered from Great Britain and two from America. Of the 200 cars purchased, 50 were ordered from Belgium. In the north, the rails were purchased in Germany despite the express stipulation about preference to China's industries. In the South, the rail order went to the Hanyang Iron & Steel Works, and a considerable portion of the cement was secured from the Chee Hsin Company. It may be that the spirit of the Loan Agreement intended that German and British manufacturers should receive all the orders and that the provisions as published were only intended as "face pidgen" but Taotai Low has stuck to the letter of the terms and awarded the contracts to the best advantage of his country.

With a German engineer on the North insisting that German goods are the best in the world and a British engineer on the south holding out the same for British goods, it takes considerable moral courage for a director to decide equitably on any tender. In justice, however, to those who have financed the loan, it is only fair that their nationals should receive the major benefits arising from its expenditure and the attitude of the British chief engineer is well taken, for if the lowest tenders are always accepted irrespective of nationality, German material would dominate the southern section as well as the northern, and this despite the fact that British tenderers received no consideration from their rivals. It is a serious matter now a days for any one engineer to arrogate to himself the power to pass judgment on the best types of engines or rolling stock or to maintain the point that the worst British make is superior to the best American or Continental goods, or vice versa. It generally lands him in hot water and keeps him busy dodging attacks. Aside from the delay natural to a serious disagreement between the high officials of the road, the progress of the Southern Section has been hampered by other causes. The survey of the line and working maps were not completed until the early part of this summer and up to date an estimate for the cost of construction has not been submitted by the Engineer which impossibilitates the making out of a proper budget. In fact the many reasons which have appeared in the press throwing the onus of all the trouble on the Chinese managing director are grossly unfair in the light of precise information, and the chief engineer must assume his share of the burden of criticism. British interests should feel thankful that they were not placed in an undesirable position through the slack or supine methods of the Chinese official. While temporary profits may be curtailed and the road fall short of accepted British standards, the principle of economy so acceptable to China will be established and undoubtedly lead to larger returns and more substantial business in the future.

Work on the road is now progressing at a favorable rate and much of the friction is eliminated. With the completion of the survey and working maps, the road has been divided into sections, divisional engineers appointed and earthwork started at various points. About 50 miles of road is now in hand and material is being delivered out on the road as fast as possible. At the Yangtse deep water terminus, wharves and warehouses with a large crane for handling heavy materials have been erected, and ocean steamers discharge alongside. Shipments of sleepers, cement, rails, cars, caissons, portable engines, etc., have already arrived and are being sent up the line by junks. About 2½ miles of temporary track has been laid connecting the river terminus with Pukow where the shops and headquarters of the southern section will be located. At this point a fair rate of progress is being made. The yard is all laid out, staff quarters erected, and locomotive, car and machine shops are about 60 per cent. completed. One Baldwin tank work locomotive is in operation in connection with the construction cars on the Pukow section. It may be stated that work on the first section is well in hand and progressing at a reasonable rate. The chief engineer in his speech on the occasion of the official ceremonies attending the formal commencement of the work on January 2nd last, compromised to have the line completed in 2½ years. As the materials are now all ordered and on the way, the work is reduced to a matter of earthwork and bridges. There are no steep grades, tunnels or unusual cuts, but the low lying country calls for many long stretches of fill. There are a total of 198 openings or bridges on the line. In the first district there are 73 bridges, one 200 ft. span and 6.50 ft. being the longest. There are three other 100 ft. openings, the balance being mainly 50 and 30 feet. The most important bridge work is in the second district, between Hsuao Chi Ho and Hsi Tsu Fu stations. In the 110th mile the line passes over the Haai Ho on 8-200 foot spans, the most important bridge on the road, and in another few miles the Fet Ho is crossed on 62-30 ft. spans; in the 127th mile the Hsieh Ho is reached and crossed by 8-50 ft. spans, and in the 134th mile the Huee Ho by 1-200 ft. and 14-30 ft. spans. So the heaviest bridge work is concentrated in a district of 24 miles of road. In the third district, from Nan Hsu Chao to the Li Kwo terminus there are 94 openings the largest being one of 1-100 ft. and 10-30 ft. spans and another of 30-30 ft. spans.

The total length of the completed road according to finished surveys will be 233½ miles, and the line from the Yangtsze Terminus north will include the following stations:

STATIONS AND PASSING LOOPS

NAME.	MILEAGE.
Yangtze Terminus	0
Pukow Shops Yard	..
Wa Cha Ying	7¾
Tung Kwo	14¼
Wu I	20¾
Chu Chao	30¾
Sha Ho Chi	39
Chang Pa Ling	45¾
San Chieh	53
Kuan Tien	60¾
Future passing Loop	64¾
Ming Kwong	70¾
Future passing Loop	74¼
Hsiso Chi Ho	81½
Lin Huai Kwan	93¾
Hsi Li Ying	102
Pong Pu	108½
Tsao Lao Chi	117
Hsin Chao	126½
Kuchon	135½
Jen Chiao	144½
Hsi Tsu Pu	154½
Nan Hsu Chao	164½
Fu Li Chi	173½
Cha Kur	183½
Tsao Cheng	192
San Pa	201½
Hsu Chao Fu	211
Mow Chwang	213½
Liu Chon	224½
Li Kwo	233½

The railway has been remarkably fortunate in securing very low prices for their bridge work as will be seen from the comparative list of tenders. A price of £9-17-9 per ton for girders

delivered in China is tangible evidence of the success of the present arrangement and of the favorable prices secured through the agents of the Railway syndicate. This contract was therefore awarded strictly on the basis of the lowest tender.

A glance through the detailed tenders for locomotives, cars, rails, and steel girders, will give a fair idea of the keen international competition for Chinese railway orders in which all the leading manufacturers of the world participated. The task of passing judgment on these varied tenders would prove difficult to experienced engineers in any country. Any final award could not escape comment and charges of favoritism and the fact that Taotai Low has so far retained the good opinion of all tenderers, speaks volumes for his tact and judgment.

In addition to being a target for foreign criticism the director having charge of all purely Chinese matters has had no easy time with his own countrymen desiring to get rich quick from the railway funds. A purely native company, composed largely of the gentry and a few mandarins, relying on their intimacy with the Director, bid for and secured a contract for a section of earthwork in Anhui province. Fine offices were engaged and the president and officers flitted around in carriages as befitted their station in life. The contract naturally was a losing one and they finally had to let go with the result that the Managing Director has had a difficult time in convincing his countrymen of his inability to make up their losses out of the railway funds. He is therefore unpopular and as some of the losers are quite influential, they are out after his official scalp. It is alleged that a contractor had tendered on the earthwork at Pukow for 30 cents per fang, but the foreign engineer proposed at the last minute that he should receive an increase of 25 cents more. This caused such astonishment amongst the other bidders that a scandal was only averted by giving the work to another.

COMPARATIVE LIST OF TENDERS FOR 100 LOW SIDED, 100 HIGH SIDED AND 50 COVERED WAGONS FOR THE TIENTSIN-PUKOW RAILWAY (SOUTHERN SECTION).—INDENT NO. 50.

Contract awarded:—

100 high sided cars to Messrs. Hurst, Nelson & Co., through Messrs. J. Bissett & Co.

50 covered wagons to the Metropolitan Amalgamated Railway Carriage & Wagon Co., Ltd., through Messrs. Jardine, Matheson & Co., Ltd.

50 low sided cars to Ateliers Métallurgiques of Belgium, through the China General Engineering Co.; 50 cars to be awarded.

1. Anderson Meyer & Co., Shanghai.
   Basteneir Works La Lauviera, Belgium, £220: £252: £195.
   Remarks: c. i. f. Pukow.
2. Brighten Malcolm & Co., Shanghai.
   Luds Forge & Co., England, £366-15: £342-7: £421.
   Luds Forge & Co., England, £339-15: £315-7: £408.
   Luds Forge & Co., England, £346-15: £322-7.
   Remarks: If wheels and axles by continental makers reduce by £27-1-0 each for high and low sided and £13-1-0 for covered.
3. China General Engineering Co., Shanghai.
   Les Ateliers Métallurgiques, £256-5-7: £242-5-5: £138-11-2.
   Remarks: c. i. f. Pukow.
4. China General Engineering Co., Shanghai.
   Les Ateliers Métallurgiques, £206-18-4: £184-13-10: £138-11-2.
   Remarks: Alternative wagons with built up under frames, c. i. f. Pukow.
5. Samuel McGregor & Co., Shanghai.
   L. P. Winby & Co., £287-13-0: £268-16-0: £208-1-6.
   Remarks: c. i. f. Pukow, shipment by Dec. 09.
6. Samuel McGregor & Co., Shanghai.
   Not specified. £250-16-0: £199-1-6.
   Remarks: Continental wheels and axles reduced low sided by £18 each and covered by £91-1-0 each.
7. Jardine Matheson & Co., Shanghai.
   Luds Forge Co., £351-18-0: £334-11-0.
   Remarks: Payment 15 days after delivery. Delivery Pukow.
   Pressed steel under frames and bogies laminated side bearing springs. Time as called for if order placed early July.
   Luds Forge Co., £331-10-0: £316-4-0.
   Remarks: Similar to first except bogies with coil springs.
   McKerrow & Co., £335-1-6: £326-8-0.
   Remarks: Sheffield Twin borrow Type, built up frames, diamond bogies.
   Nicaise Delcuve, Bel., £266-19-9: £249-5-0.
   Remarks: Pressed steel under frames and bogies with laminated bearing springs.
   Nicaise Delcuve, Bel., £254-4-9: £236-11-0.
   Remarks: Pressed up frames, Fox pressed steel bogies fitted with coil springs.
   Nicaise Delcuve, Bel., £265-4-0: £247-0-0.
   Remarks: Built up frames, pressed steel bogies with laminated springs.
   Nicaise Delcuve, Bel., £252-4-0: £234-12-0.
   Remarks: Built up frames, Fox pressed steel bogies.
   Brush Electric Eng. Co., £313-5-0: £294-12-6: £170-9-0.
   Remarks: Pressed steel under frames and bogies, laminated bearing springs. For cover wagons English wheels, axles, workmanship, but continental material.
   Brush Electric Eng. Co., £310-4-0: £291-12-0.
   Remarks: For cover wagons English wheels, axles, workmanship, coil bearing springs.
   Brush Electric Eng. Co., £290-18-0: £272-3-0.
   Remarks: Built up steel frames, pressed steel bogies, laminated bearing springs.
   Brush Electric Eng., £287-13-0: £269-0-0.
   Remarks: Built up steel frames, pressed steel bogies, coil springs.
   Brush Electric Engineering Co., £283-11-0: £264-19-0.
   Remarks: Built up steel frames, pressed steel bogies, laminated bearing springs, flat under frames and no trussed rods.
   Brush Electric Engineering Co., £280-10-0: £261-18-0.
   Remarks: Similar to previous one but fitted with coil bearing springs.
   Metropolitan Amalgamated Ry Carriage & Wagon Co., £246-16-0: £318-5-0: £188-14-0.
   Metropolitan Amalgamated Ry Carriage & Wagon Co., £328-9-0: £299-17-6.
   Remarks: Pressed steel bogies, coil springs, pressed steel under frames.
   Metropolitan Amalgamated Ry Carriage & Wagon Co., £285-12-0: £260-2-0.
   Remarks: Channel steel under frames, diamond bogies and coil springs.
   Middleton Car Co., £260-7-0: £235-3-0.
   Remarks: To their specification refer drawing 1523-A and specification 3734-A attached to tender. Wharf to be free for discharge.
   Middleton Car Co., £188-12-0.
   Remarks: To their specification No. 3747-C, drawing 1524-A.
   Attached with tender.
8. Melchers & Co., Shanghai.
   Hanover Wagon Factory, £486.
   Nerdingun Wagon Factory, £426-14-0.
   Gothaer Wagon Factory, £287-0-2.
   Remarks: Delivery in Jan. 1910, at Pukow, at tenderers' risk and cost if order given in June.
9. Mitsui Bussan Kaisha, Shanghai.
   American Car Foundry Co., £276-11-3: £262-7-2: £182-0-0.
   Remarks: Wheels and axles approved English makers.
   Dominion Car Foundry Co., £252-1-3: £237-17-2.
   Remarks: American type arch bar track for bogie.
   Ralston Steel Car Co., £257-11-0: £242-2-11.
   Remarks: American type of cast iron chilled wheels 33" dia. for bogie, c. i. f. Pukow. Delivery Jan. 1910.
10. Mitsui Bussan Kaisha, Shanghai.
    Midland Ry Carriage & Wagon Co., £321-15-0: £302-7-0: £195-8-0.—£316-10-0: £292-2 0
    Remarks: Alternate design for door as per maker's drawings 1004-B reduce £5-5-0.
    Midland Ry Carriage & Wagon Co., £318-12-0: £300-12-0.
    Remarks: Alternate design for door as per maker's drawings 100413 reduce £3-3-0 for highsided and £1-15-0 for lowsided.
11. Telge & Schroeter, Shanghai.
    Blake Boiler Wagon Engineering Co., £395: £371-10-0: £260.
    Remarks: To maker's specification, 450 pair wheels and axles 9747.
    T. Baker Co. Makers. 100 pair wheels and axles 2227 T. Baker Co. maker.
    W. Raushaw & Co., £318-12-7 1-5: £296-15-0: £205-3-7 1-5.
    W. Raushaw & Co., £307-18-7 1-5: £286-1-0.
    Remarks: Alternate diamond frame bogie.
    W. Raushaw & Co., £296-19-9 3-5: £292-13-1 1-5 £181-19-7 1-5.
    Remarks: Plate frame bogie.
12. Shewan Tomes & Co., Shanghai.
    Hearst Welson & Co., £323: £303-6-0: £218-5-0.
    Remarks: Payment 15 days after delivery. Time as called for if order placed within 10 days.
13. Mitsui Bussan Kaisha, Shanghai.
    Société Anonyme des Ateliers Camille Bastinier, £280-19-0: £263-9-0: £195-16-7.
    Remarks: Axles and wheels by approved English makers.
    Société Anonyme des Ateliers Camille Bostonies, £260-19-0: £243-9-0: £185-16-7.
    Remarks: Alternative with axles and wheels by continental makers.
14. Anderson Meyer & Co., Shanghai.
    Am. Car Foundry & Co., £275: £260: £182.
    Remarks: As per maker's specification, c. i. f. Pukow. Payment on delivery of cars.
    Am. Car Foundry Co., £234: £218.
    Remarks: Am. type arch bar track, Am. type cast iron chilled wheels with continental wheels, axles, bearings prings, brake, Tournal bearing, etc.
15. Westphal King & Ramsay, Shanghai.
    W. R. Runshaw, £284: £264-13-0: £167-18-0
    Remarks: Plate frame bogie.
    £276-10-0: £259-15-0.
    Remarks: Diamond frame bogie.
16. China Japan Trading Co., Shanghai.
    Ateliers Camille Bastinier, £245-3-6: £260-8-0: £194-5-0.
    Remarks: Continental wheels and axles.
    Ateliers Camille Bastinier, £266-3-6: £281-8-0 £102-7-6.
    Remarks: English wheels and axles.
    Head Wrightson & Co., £339-8-3: £319-4-0: £201-12-0.
    Remarks: Wheels and axles by approved makers. Delivery to be taken as fast as steamer can discharge.
17. During Wibel & Co., Shanghai.
    British Electric Engineering Co., £303-2-2 2-5: £284-2-9 3-5: not quoted.
    Remarks: Payment ¼ with order, balance on delivery Pukow, whole lot F. O. B. any English port, if order placed in June, in Nov. Tubular Brake Beam substituted.
18. Gunniss Riddle, Shanghai.
    Société Anonyme La Construction, £436: £414: £252.
    Remarks: Underframes, bodies by Société Anonyme La Construction, and wheels and axles by approved British makers 1¼% discount to each payment vs. B-L, Insurance Policies, etc.
19. Westphal King & Ramsay, Shanghai.
    B. Electric Engineering Co., £308-18-7 1-5: £289-12-0.
    Remarks: Payments ¼ with order, balance on delivery at Pukow—Tubular Brake Gear substituted.
20. Arnhold Karberg & Co., Shanghai.
    American Car Foundry Co., £312-6-0: £298-9-0: £199-14-0.
    American Car Foundry Co., £280-16-0: £266-19-0.
    Remarks: 42" steel typed wheels. American Arch Bar Trucks, wheels and axles by British makers.
    American Car Foundry Co., £230-13-0: £216-14-0.

Remarks: Am. Arch Bar Truck with American type chilled cast iron wheels 30" wheels and axles by British makers.

21. Buchheister & Co., Shanghai.
Heart Nelson & Co., £321-18-0: £304-6-0: £212-15-0.
Remarks: F. O. B. Glasgow 39 wps. from order.
Heart Nelson & Co., £315-4-9: £297-12-0: £209-2-0.
Remarks: Wheels and axles by Awen & Dyson. c. i. f. Pukow, 32 wps. from order.

22. Westphal King & Ramsay, Shanghai.
Heart Nelson & Co., £323: £303: £210.

23. Samuel McGregor, Shanghai.
Heart Nelson & Co., £321-15-0: £302-7-6: £211-5-0.
Luds Forge & Co., £363-10-0: £342-17-0: £210-10-0.
Remarks: Fox accelerated Oct., 09, c. i. f. Pukow. Consignees to take delivery in own craft. Pressed steel corrugated doors, under-frames, bogies with laminated side bearing springs.
Luds, Forge & Co., £317-10-0 £296-17-0: £197.
Remarks: Alternative.
Hearst Nilson & Co., £294-15-0: £275-7-6: £197-15-0.
Continental wheels and axles reduce £7-0-0 for Bogie and £13 for covered.
Luds Forge & Co., £344-10-0: £323-17-0: not quoted.
Remarks: Open ended type Bogie with coil bearings springs reduce £19.

24. Sino Francaise Engineering Syndicate, Shanghai.
Baune et Marpent, A—£319: 298-10-0: £270-10-0. £288: £266-10-0: £158-10-0.
Remarks: Pressed steel plate under frames, English wheels and axles.
Remarks: Pressed steel plate under frames, Belgium or Ger. Wheels.
B —£303-10-0: £282-10-0.
273: £251.
Remarks: Pressed steel plate under frames, Eng. steel plate bogie on English wheels.
Pressed steel plate under-frames on steel plate Bogie, Belgium or German wheels.
C—£297: £276.
£266-10-0: £244-10-0.
Remarks: Pressed steel plate under frames on dia. Bogies, Eng. Whs.
Remarks: Pressed steel plate under frames on dia. Bogies, Ger. or Bel. Whs.
D—£296: £275-10-0.
£265-10-0: £243-10-0.
Remarks: Normal profile steel under frames, pressed steel plate bogies, English wheels.
Normal profile steel under-frames, pressed steel plate bogies, German or Belgium wheels.
E—£280: £259-10-0.
£250: £328.
Remarks: Normal profile steel under frames, steel plate Bogies, English wheels.
Normal profile steel underframes steel plate Bogies German or Belgium wheels.
F—£273-10-0: £253.
£243-10-0: £221-10-0.
Remarks: Normal profile steel under-frames. diamond type Bogies, English wheels.
Normal profile steel under-frames, diamond type Bogies, Belgium or German wheels.

25. Scott Harding & Co., Shanghai.
Benshaw & Co., £291: £277-8-0: £167-16-0.
Benshaw & Co., £279-10-0: £265-3-4 4-5.
Remarks: Steel plate and angle iron Bogies.
Benshaw & Co., £275-5-2 2-5: £260-19-7 1-5.
Remarks: Diamond Bogie frames.
Nicaise & Delcuve, £272-13-2 2-5: £254-9-0: £186-17-7 1-5.
Remarks: Built up under-frames.
Nicaise & Delcuve, £274-16-2 2-5 £256-12-0.
Remarks: Pressed steel under-frames.

26. Dodwell & Co., Shanghai.
Brush Electric Engineering Co., £276-1-6: £257-17-6: £151-19-0.
Remarks: Pressed steel under-frames and bogies laminated bearing springs.
Brush Electric Engineering Co., £253-10-6: £235-6-6.
Remarks: Built up steel under-frames (alternative A).
English Works, £246-7-0: £228-3-0.
Remarks: Built up steel under-frames (alternative B). Bearing springs.
English Works, £273: £254-16-0.
Remarks: Pressed steel under-frames and bogies, special bearing springs.
English Works, £250-9-0: £232-5-0.
Remarks: Built up steel under-frames pressed steel bogies (alternative A), bearing springs.
English Works, £243-5-6: £225-1-6.
Remarks: Built up steel under-frames, pressed steel bogies (alternative B), bearing springs.
English Works: £256-12-0: £238-8-0.
Remarks: Pressed steel under-frames, diamond frame bogie.
English Works, £234-1-0: £215-17-0.
Remarks: Built up steel under-frames (alternative A), diamond frame bogie.
English Works, £226-17-6: £208-13-6.
Remarks: Built up steel under-frames (alternative B), diamond frame bogie. All wheels are of mild steel disc centres, tubular brake beam substituted.

27. Vulcan Iron Works, Shanghai.
R. Y. Pickering & Co., £296-3-7 1-5: £278-8-4 4-5: £168-18-0.
Remarks: British make material. If wheels and axles by maker reduce £2-10-0 for bogie and £1-5-0 for covered wagons. Pay 10 days after each shipment.

28. Ilbert & Co., Shanghai.
A. Not specified, £290: £272-17-0: £185-15-0.
B. Not specified, £276: £259-7-0: £171-4-0.
Remarks: Belgium wagons, wheels by approved maker.
C. Not specified, £254-4-0: £236-11-0: £175-7-0.
Remarks: Wheels and axles by any good maker. For the covered wagon wheels and axles are by Vereingte Stahlweske Van des Zypenhoeln.
D. Not specified, £278: £261-9-0.
Remarks: Wheels and axles by Vereingte Stahlweske Van der Zypen.
E. Not specified, £269-15-0: £254-4-0.
Remarks: Wheels and axles by approved makers, rolled steel channel under frames and diamond frame bogies, British throughout.
F. Not specified, £271-17-0: £252-2-0.
Remarks: Rolled steel channel under frames, British wagon, wheels and axles by Vereingte Stahlweske Van der Zypen.
G. American Car Foundry £372: £357: £224.
Remarks: Wheels and axles by approved makers.

29. J. P. Bisset Co., Shanghai.
Hearst Nelson & Co., £310-19-0: £291-7-7: £209-4-10.

30. Arnhold Karberg & Co., Shanghai.
R. Y. Pickering & Co., £337-6-0: £316-16-0: £189-12-0.
Remarks: Couplers by Henricut Steel Foundry & Co., types and wheels by Steel Co. of Scotland.

31. Craig & Co., Shanghai.
£266-10-0: £251-2-6.
Remarks: Rolled steel channel under frames, diamond frame bogie, wheels by approved maker.
£268-11-0: £249-1-6.
Remarks: Rolled steel channel under frame, wheels and axles by Vereignte Stahlweske Vander Zypen.
£274-14-0: £258-6-0: £179-7-6.
Remarks: To our specification, wheels and axles by same maker as previous.
£251-2-6: £233-14-0: £169-2-6.
Remarks: To our specification wheels and axles by any good maker.
£287: £269-11-6: £183-9-6.
Remarks: To our specification, wheels and axles by approved maker, British.
£272-13-0: £256-5-0.
Remarks: Belgium wagons, wheels and axles by approved maker, British.

32. Horatio Robertson, Shanghai.
Société Anonyme des Ateliers Camille Bastanier, £285: £263: £206.
Remarks: Built up type all Belgian.
£311: £286: £218.
Remarks: Built up type Belgian Bodies underframe with British wheels and axles.
£216: £196: £172.
Remarks: Built up type Belgian make bodies under-frames without wheels which will be by approved British makers supplied separate. 180 delivery Jan. 1910.

33. Dodwell & Co., Shanghai.
Middletown Car Works, G. $1283.88: G. $1162.38: G. $927.56.
Remarks: To maker's design and specification. Am. wheel and axles.
Middletown Car Works, G. $1267.30: G. $1147.74: G. $912.23.
Remarks: Amendment.

34. American China Co., Shanghai.
Hich Loco & Car Works, £675: £695.
Remarks: Second hand cars.

35. Mackenzie & Co., Shanghai.
Cravens of Sheffield, £298-5-9 3-5: £278-5-0: £211-2-4 4-5: £163-2-0.
Nclellan Sto.
Remarks: Alternative.

36. Arnhold Karberg & Co., Shanghai.
Wegmann & Co., Cassell, £323-3-0: £304-6-0: £234-6-0.

37. Centrale de Construction, Shanghai.
Wegmann & Co., Cassell, £350: £340: £270.

38. Arnhold Karberg & Co., Shanghai.
American Car Foundry Co, £305-15-0: £292-5-0: £193-15-0.
Remarks: Wheels and axles and truck by British makers.
£275: £261-10-0.
Remarks: With steel typed wheels, 42" wheels and axles by British makers.
£223-15-0: £210.
Remarks: American type chilled cast iron wheels, 33" wheels and axles by British makers.

39. Vulcan Iron Works, Shanghai.
R. Y. Pickering & Co., £288-19-4 4-5: £271-10-9 3-5: £162-14-9 3-5.
Remarks: Pay ten days after each shipment; if makers' wheels and axles are used reduce £2-10-0 for the Bogies and £1-5-0 for covered wagons.

40. Fearon Daniel & Co., Shanghai.
Gloucester Ry Carriage Wagon Co., £333-6-0: £313-2-0: £191-18.

41. Forbes & Co., Shanghai.
Pressed Steel Car Co., U. S., G. $1750: G. $1670.

42. Garrells Borner & Co., Shanghai.
Midland Ry Carriage Wagon, £320-1-0: £311: £203-13-0.
Remarks: Alternative sole bars reduce £5 each Bogie. Alternative doors reduce £3 for high sided and £1-10-0 for low sided.

43. Carlowitz, Shanghai.
German make, £284-8-0: £270: £188-7-0.
Remarks: Without brakes 4 block screw brake for bogie at £10-9.

44. Nicholas Tsu, Shanghai.
Not specified, £348: £338: £268.
Remarks: 4 block screw brake for covered at £12-9.

45. Diederichsen, Shanghai.
Waggong Tabrich Uerduigen, £385.
Remarks: Order not later than 15-7-09.

46. Chee Sheng Iron Works, Shanghai.
$2800: $2500: $2200.
Remarks: Duty, insurance extra.

47. Olof Wijk & Co., Shanghai.
A. Makers. £353-10-0: £336: £223-10-0.
Remarks: Exclude cost of erection.
B. Makers, £338: £320-10-0: £208.

48. Compagne Générale de Constructions Industrielles, Shanghai.
$2650: $2250: $2800.

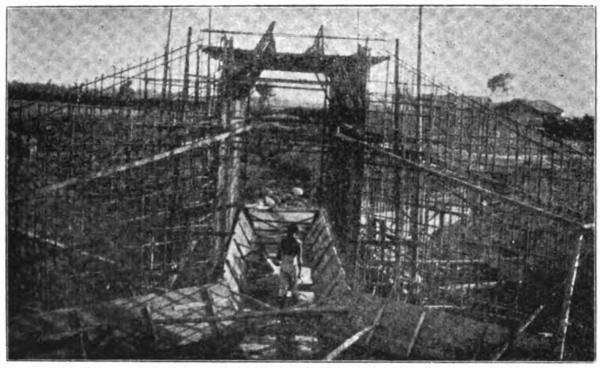
COMPARATIVE LIST OF TENDERS ON INDENT 51 FOR EIGHT LOCOMOTIVES FOR THE IMPERIAL TIENTSIN-PUKOW RAILWAY (SOUTHERN SECTION.)

The contract for six locomotives was awarded to the North British Locomotive Co. of Glasgow, through Messrs. Jardine, Matheson & Co., Ltd., and two locomotives to the Baldwin Locomotive Works of Philadelphia, through Messrs. Arnhold, Karberg & Co.

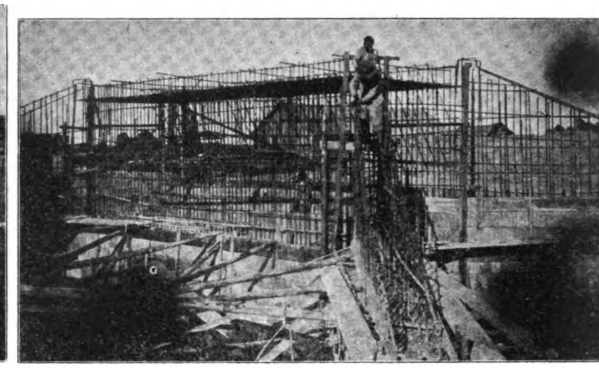
1 Scott, Harding & Co., Shanghai.
A. Borsig & Co., £3157-12-6: £25261.
Robert Stephenson, £3399-10-0: £27196.
N. British Loco. Co., £3425-7-6: £27403.

2. Von Duering Wibel & Co., Shanghai.
At their option £3137-10-0: £25100.

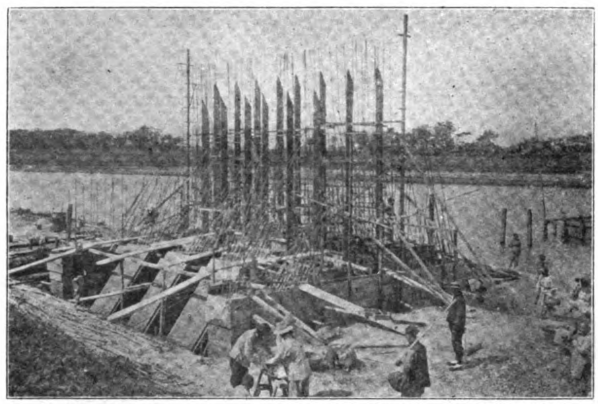
ANHUI RAILWAY.—REINFORCED ABUTMENTS AND PIER AT WAN-CHI, 20 MILES FROM WUHU



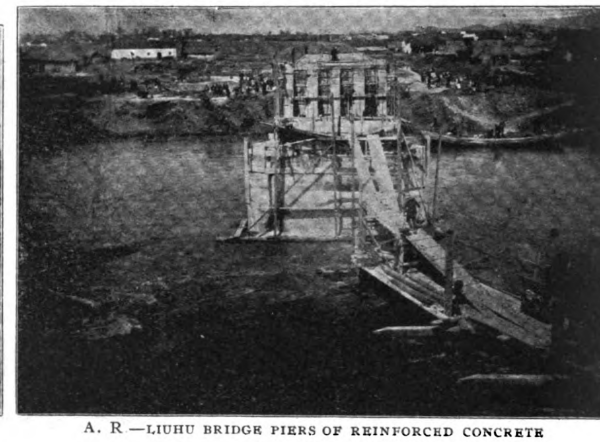
A. R.—LARGE REINFORCED CULVERT UNDER CONSTRUCTION



A. R.—REINFORCED CONCRETE CULVERT UNDER CONSTRUCTION

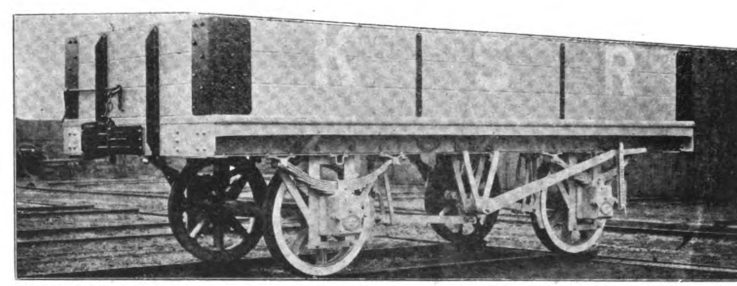


A. R.—REINFORCED CONCRETE ABUTMENT UNDER CONSTRUCTION



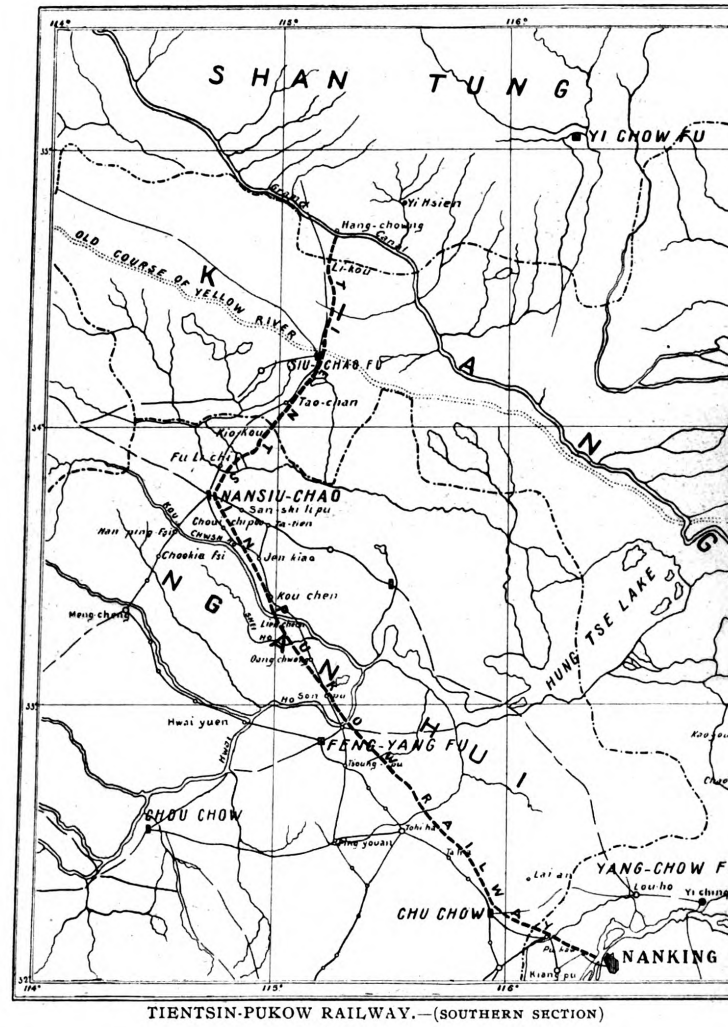
A. R.—LIUHU BRIDGE PIERS OF REINFORCED CONCRETE

3. Ilbert & Co., Shanghai.
   Vulcan Foundry, £3420-0-0: £27360.
   British make £3305-0-0: £26440.
   German make £2936-0-0: £23488.
   Any good make, £2775-0-0: £22200.
4. Dodwell & Co., Shanghai.
   N. British Loco Co., £3415-0-0: £27320.
   Société Anonyme des Ateliers de Thirian £2795-0-0: £22360.
   A. Borsig, £3222-0-0: £25776.
5. Mitsui Bussan Kaisha, Shanghai.
   American Loco. Co., £3154-6-0: £25234-8-0
   American Loco. Co., £3053-3-6: £24425-8-0.
   American Loco. Co., £2973-11-4: £23788-10-8.
6. Mitsui Bussan Kaisha, Shanghai.
   N. British Loco. Co., £3491-16-0: £27934.
   Buper Peacock & Co., £3743-10-9: £29948-6-0.
7. Olof Wijk & Co., Shanghai.
   Société Anonyme, £3809-10-0: £30476.
   John Cockerill Seraing Machine & Locomotive, £3627-0-0: £39016.
8. Melchers & Co., Shanghai.
   Works Essnigen, £3130-17-0: £25046 16-0.



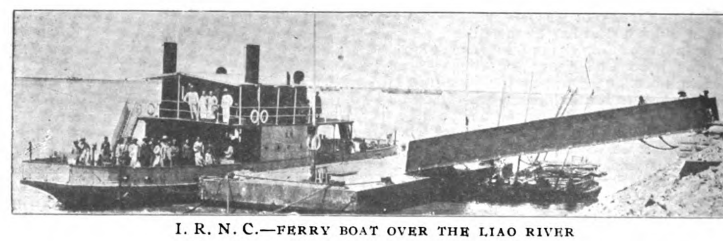
CHEKIANG RAILWAY.—TYPE OF RENSHAW & CO.'S GOODS WAGON, FURNISHED THROUGH MESSRS. BRIGHTEN, MALCOLM & CO., LTD.

9. Vulcan Foundry, Shanghai.
Makers, £3500-0-0: £28000.
10. Andersen Meyer & Co., Shanghai.
Société Anonyme des Ateliers de Thirian, £2925-0-0: £23400.
11. Andersen Meyer & Co., Shanghai.
Société Anonyme Franco Belge of Rasunes, £3591-6-0: £28730-8-0.
12. Andersen Meyer & Co., Shanghai.
Andrew Barclay Sons, £3645-0-0: £29160.
13. Carlowitz & Co., Shanghai.
Heuschel & Sohn, Cassell, £3108-0-0: £24864.
14. Sino French Syndicate, Shanghai.
Société Anonyme de Saint Leonard, £3650-0-0: £29200.
15. Mackenzie & Co., Shanghai.
Robert Stephenson, £3437-10-0: £27500.
16. Westphal King & Ramsay, Shanghai.
Nasmyth Wilson & Co., £3410-0-0: £27280.
17. Siemssen & Co., Shanghai.
Georg Egestorff, £3095-0-0: £24760.
18. Innis & Riddle, Shanghai.
Andrew Barclay Sons, £3996-0-0: £31968.
19. Bielfeld & Son, Shanghai.
Robert Stephenson, £4625-0-0: £37000.
20. China Japan Trading Co., Shanghai.
N. British Loco. Co., £3513-16-6: £28110-12-0.
21. Telge & Schroeter, Shanghai.
A. Borsig, £3240-0-0: £25920.
Georg Egestorff, £3250-0-0: £26000.
Krauss & Co., Munich, £3280-0-0: £26240.
Hawthorn Leslie, £3879-0-0: £31032.
22. Samuel McGregor & Co., Shanghai.
N. British Loco. Co., £3451-0-0: £27608
Kitson & Co., Leeds, £3565-0-0: £28520.
Beyer Peacock & Co., £3689-0-0: £29512.
23. China Gen. Engineering Co., Shanghai.
Les Ateliers Métallurgiques, £2460-2-2: £19-654-4-0. £458-10-11: £3668-7-4. £2918-13-1: £23322-11-4.
24. Buelfeld & Ones, Shanghai.
Hohensolhun Dusseldorf Grafewberg, £3708-0-0: £29664.
25. Brighten Malcolm & Co., Shanghai.
Hudswell Clarke, £4515-0-0: £36120.
Vulcan Foundry, £3395-16-6: £27166-12-0.
26. Shewan Tomes & Co., Shanghai.
Hawthorne Leslie, £3469-0-0: £27752.
27. Jardine Matheson, Shanghai.
N. British Loco. Co., £3143-0-0: £25144.
Haunoversche Maschinenbau Action Gesellschaft, £2885-0-0: £23080.
Vulcan Foundry, £3347-0-0: £26776.
Lenia Loco. Machine Co., £2971-0-0: £23768.
£2802-0-0: £22416.
28. Samuel McGregor & Co., Shanghai.
Winhy & Co., £2853-0-0: £22824.
A. Borsig, £3234-0-0: £25872.
29. Horatio Robertson, Shanghai.
Société Anonyme des Ateliers de Thirian, £3060-0-0: £24480.
30. Garrells Borner, Shanghai.
F. H. Maffie, £3202-0-0: £25616.
31. Tahata & Co., Shanghai.
Berliner Machinenbau Action Gesellschaft, £3624-6-3 ⅛: £28994-10-5.
32. Craig & Co., Shanghai.
Not specified, £3264-12-6: £26117.
£2900-15-0: £23206.
£2741-17-6: £21935.
33. J. Whittall & Co., Shanghai.
N. British Loco. Co., £3150-0-0: £25200.
34. Buchheister & Co., Shanghai.
Robert Stephenson, £3509-0-0: £28072.
Kitson & Co., £3632-0-0: £29056
Beyer Peacock, £3776-0-0: £30208.
35. Am. Chinese Co., Shanghai.
Beyer Peacock, £3976-0-0: £31808.
36. J. B. Bisset, Shanghai.
Robert Stephenson, £3388-6-2: £27106-9-4
37. Westphal King & Ramsay, Shanghai.
Haunoversche Machinenbau Haunover Linden, £3041-0-0: £24328.
Nasmyth Wilson, £3510-0-0: £28080.
38. Am. Chinese Co., Shanghai.
Robert Stephenson, £3830-0-0: £30640.
39. Arnhold Karberg, Shanghai.
Baldwin Loco. Works, £3127-0-0: £25016.
Baldwin Loco. Works, £3037-0-0: £24296.
Baldwin Loco. Works, £2767-0-0: £22136.
40. Westphal King & Ramsay, Shanghai
Robert Stephenson, £3410-0-0: £27280
41. Westphal King & Ramsay, Shanghai.
N. British Loco. Co., £3420-0-0: £27360



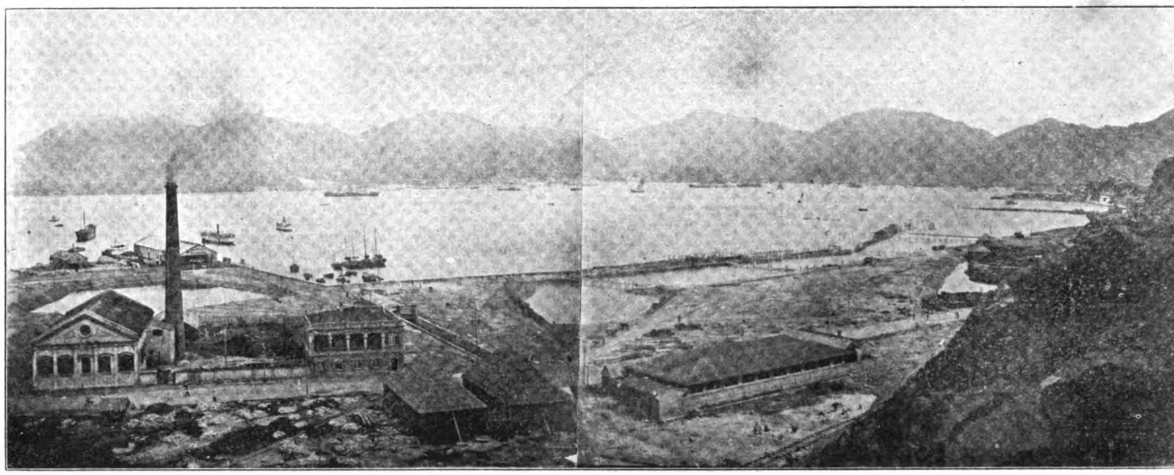
TIENTSIN-PUKOW RAILWAY.—(SOUTHERN SECTION)

S. C. R'Y.—FREIGHT CAR


I. R. N. C.—FERRY BOAT OVER THE LIAO RIVER

KOWLOON-CANTON RAILWAY

(BRITISH SECTION.)



KOWLOON-CANTON RAILWAY.—VIEW OF RECLAMATION FOR KOWLOON TERMINAL YARDS AND STATION

The Kowloon-Canton Railway project that has for its purpose the safeguarding of the interests of Hongkong as a distributing center for South China by establishing railway connection with the trunk line that, when completed, will run from Canton to Peking, is perhaps one of the most important undertakings in South China. When the Canton-Hankow section of the trunk line to Peking was projected and a concession granted the American-China Development Company, it was proposed to construct a deep water harbor in the Chinese territory near Canton, the terminus. Hongkong at once realized that if such a port were established and no effort made to secure the benefits of railway connection with the trunk line, her future as a distributing center for South China would be threatened. A concession was secured in 1898 by the British and Chinese Corporation to build a line connecting Kowloon and Canton which, when completed, would provide the needed railway connection with the trunk line and thus preserve to Hongkong at least her share of the trade even should the deep water harbor contemplated at Canton be realized.

After securing the concession, the British and Chinese Corporation remained inactive and it was not until the Government and commercial interests of Hongkong were roused to the necessity of securing this railway connection at all hazards even to the extent of pledging her revenues, that the project took form. As evidence of the interest taken we quote from the speech of the Hon. Gresham Stewart, Chairman of the Committee of the China Association, made in October, 1905, in support of a petition to the Governor, as follows:

"Whatever the reason, the fact remains that a big financial body like the British and Chinese Corporation have utterly failed to utilize the concession they have held, and it is unreasonable to suppose that this colony will sit still and run the risk of tremendous injury without doing something to protect itself." And further, he continued:

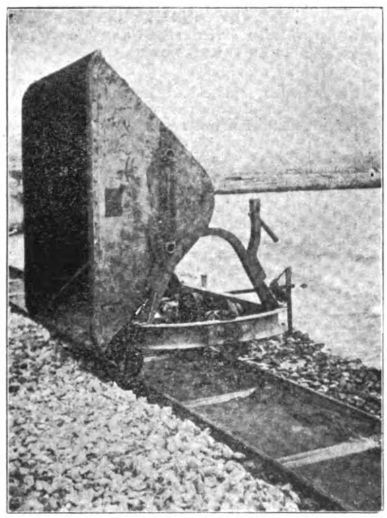
"What we would like to see laid down is the broad principle that for the preservation of the colony, and the safeguarding of British interest in South China, the colony be empowered, if necessary, to pledge its credit to ensure the making of the railway and securing the terminus at Kowloon."

It must be understood that the concession secured by the British and Chinese Corporation contemplated only the construction of the line in Chinese territory. From Canton to the boundary of the leased territory is approximately 89 miles and the distance from the boundary of the leased territory to Kowloon, a distance of 22 miles. Up to the time of Mr. Stewart's speech in October, 1905, it might be said that the concessionaires had accomplished nothing. But in the mean time, the American-China Development Company agreed to give up its concession to construct the Canton-Hankow and receive in return the sum of $6,750,000 U. S. C. in compensation. The Chinese Government failed in an attempt to raise sufficient money by a domestic loan to pay off the American company and was obliged to negotiate a foreign loan. This was the opportunity for Hongkong and arrangements were made by the latter to advance the Chinese the sum of £350,000 secured by the opium revenue of Kwangtung, Hupeh and Hunan, bearing interest at 4.5% per annum and redeemable in 10 years. This secured to Hongkong traffic connection with the Canton-Hankow and eliminated the possibility of severe competition from the railway as threatened in the original proposed plans for the Canton terminus.

The Government of Hongkong then proceeded to make arrangements to construct the line through British territory and in the fall of 1905 surveys for final location were completed and submitted and the title to the land for the right of way resumed by the Crown. Before the end of 1905 about two and a half miles embankment work were completed under the direction of the Public Works Department.

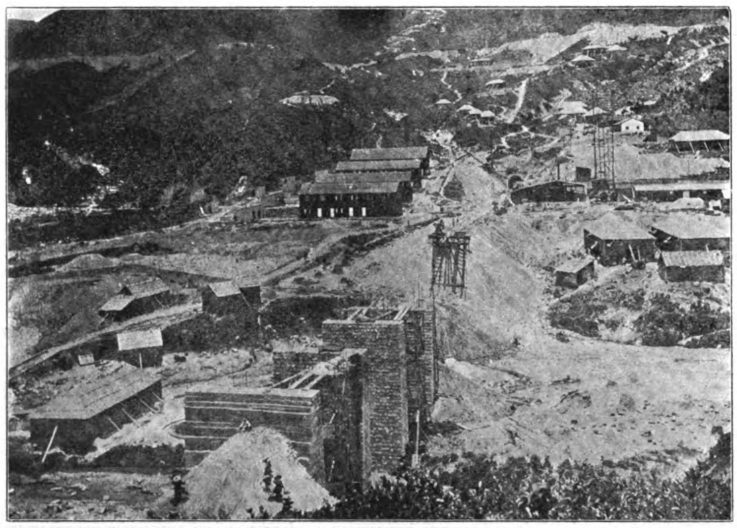
The estimated grade of the line from Kowloon to Samchun (the point at the border of British territory) is about one in one hundred. There are about 50 bridges running from five feet in length to the largest one of 200 feet, the latter having two 60 and two 40 foot spans.

These are built largely of masonry and concrete, but where the necessary foundations could not be laid, girder bridges with brick piers were constructed. All the bridges were built sufficiently wide to accommodate a double track.



KOWLOON-CANTON RAILWAY.—GERMAN DUMP CAR

KOWLOON-CANTON RAILWAY.—GERMAN DUMP CAR



KOWLOON-CANTON RAILWAY.—NORTH FACE OF BEACON HILL TUNNEL, FROM ACROSS SHATIN VALLEY

The most difficult features of construction were the tunnel work and the cuts. In all there are five tunnels, the longest being 7,256 feet and the balance 924 feet, 350 feet, 175 feet and 150 feet respectively. The tunnels 350 feet and 150 feet in length were driven through solid rock, while the operations on the balance found disintegrated granite alternating the solid rock. All the tunnels were driven wide enough to accommodate a double track with the exception of the 7,256 foot, and the span of the arch in each of these tunnels is 35 feet lined with brickwork. The drainage is from the ends of the tunnels in each instance. The cuts were also 35 feet wide in which solid rock and disintegrated granite predominated.

The steel used is the English standard tee rail weighing 85 pounds to the lineal yard, each rail being 35 feet in length. They are being laid with matched joints and ordinary angle bars are utilized. Suspended joints are the standard and five-eighths spikes with chisel point and ordinary hook head are used.

Australian hardwoods are used for sleepers. The standard for jarrah ties is 9″×5″×10 feet and distributed at an average of 2,000 to the mile, while the standard of New South Wales hardwood is 10″×5″×10 feet.

NORTH PORTAL OF TAIPO TUNNEL. BRIDGE 25 IN FOREGROUND TO LEFT. THE TEMPORARY ROAD HAS BEEN TAKEN DOWN

KOWLOON-CANTON RAILWAY.—VIEW FROM NORTH PORTAL OF NO. 5 TUNNEL, SHOWING BRIDGE NO. 25 UNDER CONSTRUCTION

The embankments throughout are 17.5 feet wide designed for a single track except where material was available from the cuts, in which instances they were widened to 30 feet so as to accommodate the proposed double tracking. The labor used in the construction across the paddy fields was mostly comprised of native women and the vehicle the native basket. The material used in the fields consisted of mud; on the slopes, turf; and the rest of the embankment is built largely of disentegrated granite. The earth from the heavy cuts was transported generally in small dump cars propelled on a two foot gauge track by coolies. These cars were supplied by Arthur Koppel, Berlin.

The labor for the tunnel work was imported from India as the local natives could not be induced to undertake underground work. Finally some of the coolies, returned from South Africa, replaced the Indians, as the former had become expert at this work. Compressed air plants were installed at the ends of the big tunnel to operate the pumps and the drills. Railways were installed to handle the dirt and rock. Contracts for portions of the work on the smaller tunnels were let to Italian contractors.

The bricks used were manufactured by the company in its brick plant installed on the right of way and were transported in Indian carts drawn by bullocks. This means of transport was found satisfactory and economical.

The reclamation work which is to provide a terminal yard at Kowloon with seven or eight miles of sidings is well under way and the work was expedited by utilizing a standard gauge track from the heavy cuts to carry the earth, etc., for the fill. Heavy wooden dump carts hauled by switch engines were used. The rails will be used on the permanent way and the switch engines were part of the company's regular rolling stock. Sidings will also be provided to connect with the warehouses and godowns.

The rolling stock will be of British standard. Two locomotives have been ordered to add to the present yard engines and the coaches and freight cars will be ready for use by the time the road is officially opened next year. The estimates for the British section alone is believed sufficient to provide rolling stock for over two-thirds of the line from Kowloon to Canton. Along the 22 miles of line there will be five stations. These stations as well as the buildings at Kowloon terminal will be built of brick and of a substantial character.

The cost of this railway has been the subject of much discussion in the colony. The original estimates submitted amounted to $5,053,274. These estimates did not include many items

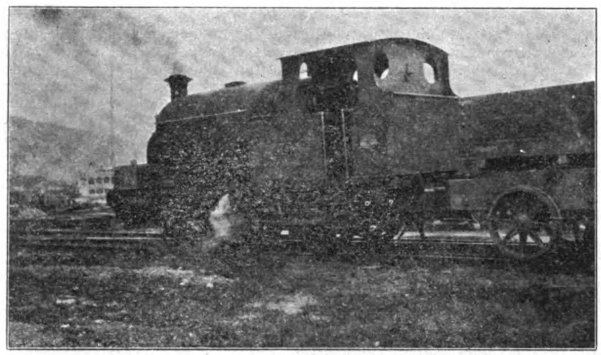
of cost and were based on a rather indefinite preliminary survey. They did not make provision for rolling stock, shops, etc Indeed they were not recognized as other than a rough calculation. It was not until June, 1907, that the first comprehensive estimate was submitted by the Resident Engineer. It did not provide for rolling stock or workshops, and amounted to $8,003,642. Again in December, 1907, estimates including rolling stock and resumption of land at Blackhead's point were submitted which brought the amount up to $9,860,283.83. In May, 1909, the estimates submitted included the workshops and all items of construction with the exception of land purchase or resumption and amounted in all to $11,004,128. It is expected that up to the end of the year 1909, the sum of $10,015,223 will have been expended and the budget for the year 1910 provides for an expenditure of $1,315,625, which will bring the cost of the line up to about $12,000,000. Of the expenditure for 1910, $374,805 will be used for the resumption of land and the balance will be expended as follows: Bridges, $120,000, fencing, $14,653; track, $125,000; workshops, $60,000; stations, $238,300; station machinery, $25,000; furniture, $5,000; rolling stock, $80,000; tools and plant for locomotive and carriage shops, $60,000.

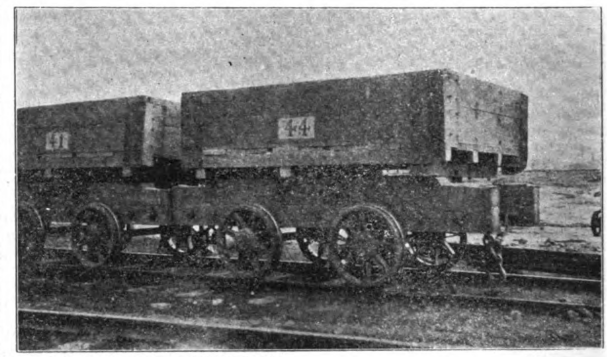
The following comparative table of estimates made in 1905, 1907 and 1909 respectively will be of interest.

	1905	1907	1909
Survey	37,642.00	42,267.65	42,277.65
Land	10,500.00	1,196,538.02	1,195,879.20
Earthwork	1,530,997.00	2,260,000.00	2,268,176.05
Tunnels	1,924,860.00	2,503,415.00	3,499,824.69
Roads		82,500.00	84,979.84
Bridges and Culverts	412,650.00	1,033,577.67	1,082,614.50
Fencing		32,209.00	40,399.45
Telegraphs		26,864.00	26,971.42
Ballast and Permanent Way	716,626.00	915,955.94	864,259.25
Station Buildings, Machinery and Furniture	315,000.00	489,380.00	494,998.47
Workshops and Stones			60,000.00
Plant including rolling stock, etc		714,000.00	691,540.10
General charges, including salaries, quarters officer, medical and other expenses	105,000.00	450,234.38	534,885.56
Home charges		70,099.80	74,478.29
Accounts			42,843.53
Damages, etc		43,242.37	
Total	5,053,274.00	9,860,283.83	11,004,128.00

At a meeting of the Hongkong Legislative Council, held May 14th, 1909, upon which occasion the report of the Resident Engineer was presented for consideration, Sir Frederick Lugard, Governor of Hongkong, made the following comprehensive statement in regard to the finances and the progress made in construction which is perhaps the most complete and authoritative review of the line. His Excellency said:

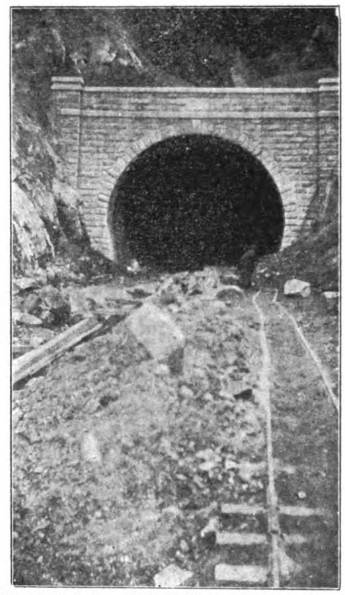
"Gentlemen, before proceeding to the business of the day, I have to make a statement regarding the progress of the railway. There is among the papers laid on the table this afternoon first a report by the chief resident engineer, and in connection with that report you will no doubt notice that the various departmental reports which have been laid on the table this afternoon are not in the usual form. They do not bear the heading 'Laid Before the Legislative Council', but are headed Appendix with a letter of the alphabet. The reason of this slight alteration is that we propose in future to somewhat condense these departmental reports and publish them in a small volume, which will be laid before the Council. But in order not to further delay these reports, such as are already printed have been laid this afternoon. On February 6th last I made a statement to the Council as to the progress and the financial position of the Canton-Kowloon Railway. And again, when introducing the estimates on 24th of September last, I reported such progress as had taken place in the interval, and I promised that I would make an annual report to the Council, both as regards finances and the progress of the railway, the liability which we are incurring in respect of it; and the ways in which these liabilities are to be met. I much regret the delay in presenting this annual report and laying this statement. I had hoped it would be ready at one of the earlier meetings of the year. We have no resolution this year before Council for votes for the construction of the railway during the year because, under the new financial instructions, which have been lately received from the Colonial Office, the requisite funds for the construction during the year are included in the annual estimates. I propose, however, to follow the course I did last year, and to give you as full a statement of events connected with the railway as I can, and I will endeavor to make as clear as possible the situation both as to expenditure and the prospects both as regards time and date of completion. And I hope I shall be able to amplify the report of the chief resident engineer, and draw your attention to the significance of the figures. I will deal first with expenditure, and I am sorry to say it is not an exhilarating subject. First of all we had an estimate by Mr. Bruce which amounted to $5,053,274. That estimate, as I explained in my former statement, was a very rough one. It was based on a very rough preliminary survey and included no calculation of quantities and many important items such as rolling stock, workshop, etc. It was accepted as a rough estimate by my predecessor when the railway first began. The first full estimate that we had from the chief resident engineer, appointed by the consulting engineers, was in June, 1907. That amounted to $8,003,642. It did not include any provision for rolling stock or for workshops, because at that time it was impossible to know exactly what rolling stock would be required, and whether or not we would require any workshops. At the end of the same year, December, 1907, a further estimate was submitted to the Council, which amounted to $9,860,283. Provision for rolling stock was inserted and the estimate also included the cost of the resumption of the deep sea wharf in the neighborhood of Blackhead's point, but it still did not include any provision for workshop as the subject was still under discussion. The provision made in the estimate for land was also somewhat vague. No final provision had been taken as regards the site for the terminal station. The estimate which is included in the papers laid this afternoon amounts, as you will see, to $11,004,128. This includes workshops and all items, but it is still possible that the land resumption may not be adequately provided for as all matters in connection with that subject are not yet finally concluded. The excesses of this estimate over the one which was laid before the Council in December last amount to $1,143,845, but if you will turn to column E, on page ten of the report, you will see that of this total sum $996,409 represented the cost of the tunnels. $120,000 of this excess is provided for workshops and there remains a balance of $27,436 which is distributed over various items. But you will see also in the later estimates that there is a great variation of the figures from those contained in the estimate of last year. There is a saving of $82,500 for rolling stock, and $51,700 in ballast and permanent way, making a total of $134,000 saving on these two items. This is met by excess of $90,000 on salaries and $43,000 on accounts, making $153,000. Bridges show an excess of $47,261; half of that is met by savings on various items, and the other half goes to swell complete the total excess in the estimate of $1,143,845. These large over and under estimates are most unsatisfactory, and they show that the figures which have been supplied have not been reliable. But at the same time I would remind you that the mere question of estimates does not mean a reflection on British engineering. It is partly due to the fact that we are engaged in constructing a tunnel such as has not been undertaken in this part of the world before, and under which the conditions both as regards labor and as regards explosives were extremely difficult to foresee. The variations also under the estimates are in part due to the fact that all the data of the railway were not known, and indeed are not known fully yet. Even had the railway been in the hands of contractors there would have been many items excluded for which supplementary estimates would have been required. Nevertheless, we have this fact that this tunnel will cost nearly a million more than the estimate given to us at the end of last year, and that in spite of the fact that the engineers had acquired already a year's experience in dealing with conditions under which the tunnel had to be constructed. During the year that is passed the quality of the labor has greatly improved. The coolies have been more efficient, and understand the work better. We have been able to engage a number of coolies returned from South Africa who have been trained miners, and have been a great acquisition to work in the tunnels. There has been less sickness and fever. The tunnel has been found to be approximately 44 feet less in length than it had been anticipated, owing to an errror in the original triangulation. These causes have receded the cost per foot in a remarkable way. You will see on page 2 a very striking statement in this connection. The heading cost per foot in 1907, $184, which has been reduced to $70.04. The enlarging in 1907 costs $275 which has been reduced to $140.86; the bricking-in was $221 and has been reduced to $113,54. Now, were it not for these very large reductions per lineal foot the excesses would have been something I dread to calculate. Obviously, it is beyond my personal control whether or not the estimate formed by the engineers is adequate. The staff which has been employed has been reduced wherever it has been possible to do so without detriment to the efficiency of the work. The medical arrangements which are practically carried out by Government have increased in efficiency. Everything in fact that the Government has been able to do has been done. The cost of the tunnel—I speak of the big tunnel only; you will of course recollect that sum includes the smaller one as well as the large one—is estimated as you will see in the report at $3,000,000. Its length is 7,212 feet, which works out at $416 a foot; that is to say $2,196,342 a mile or in round figures about £200,000 a mile. If we add to that the cost of permanent way and the share of the tunnel's length in the general charges of the railway, you will see that the cost of the tunnel is not less than one-third of the total cost of the railway. As regards the special difficulties which have been met with, and which are held accountable for this large increase, I refer you to the report, in which you will see what the chief resident engineer has to say on the subject. The excess over the estimate in December, 1907, is in part due to the fact that we are completely lining the tunnel throughout. It had been hoped that in certain sections where the rock is exceedingly hard, lining might have dispensed with, but on Mr. A. J. Barry's late visit it was decided to line it throughout, but with a reduced number of rings of brickwork in those sections that were hard. Because the stratum was full of faults it was feared that the vibration of the train would bring the rock down on top of passing trains. Of the other tunnels the only one which has given any difficulty and on which any extra cost has been incurred is the Taipo tunnel, where heavy landslips were experienced owing to the slushy clay which formed the hillside. This necessitated very elaborate timbering at great cost. Its length is 924 feet, of which 573 feet had been driven, and 158½ feet lined on 31st December last. The other excesses to which I specially alluded, $90,000 salaries. $43,000 accounts include the cost of the salary for a portion of the year of an expert whom we hope to obtain from India to organize the work of opening the line and advise us on several subjects, including negotiations for the joint working agreement with the Canton Section. The loss on exchange is largely responsible for the ex-



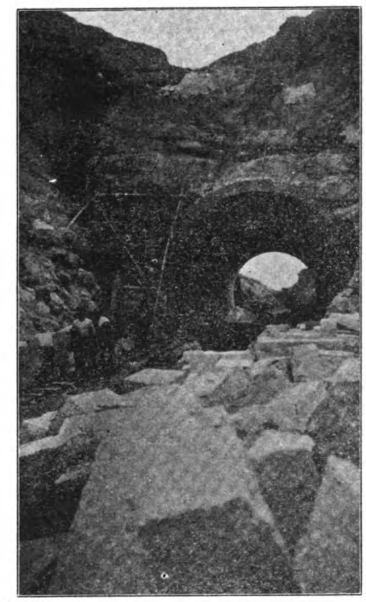


KOWLOON-CANTON RAILWAY.—BRITISH LOCOMOTIVE AND DUMP CARS

SHORT TUNNEL NEAR KOWLOON

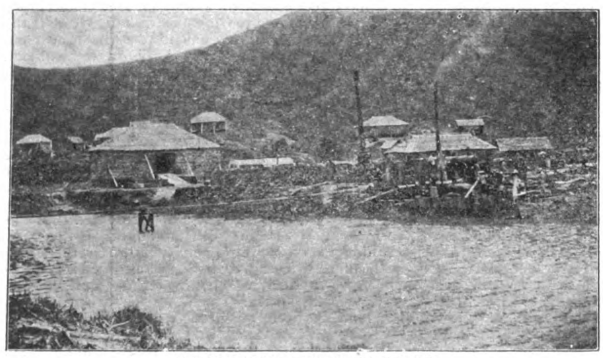


A TUNNEL ENTRANCE

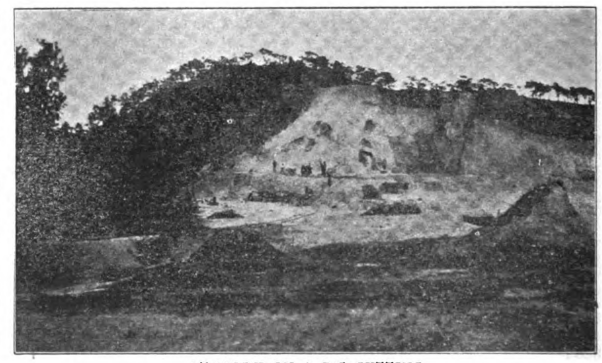


SHORT TUNNEL NEAR KOWLOON

KOWLOON-CANTON RAILWAY

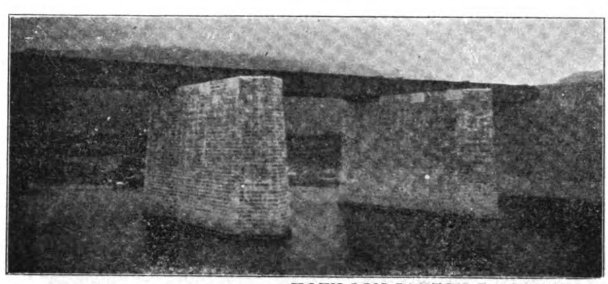


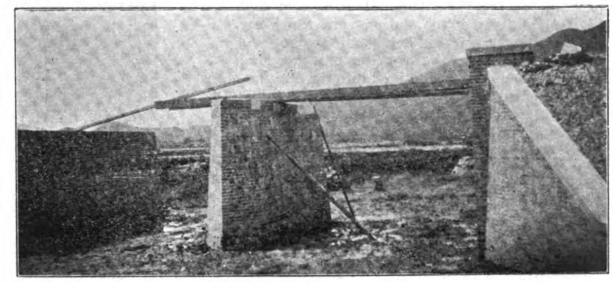
CAISSON WORK AT LO-FU FERRY



AT WORK ON A BIG CUTTING

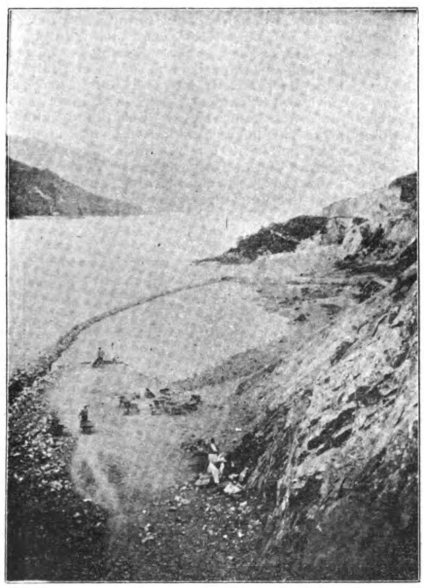
cess in these two items. Prior to 1908 no staff had been provided for accounting. Such accounting work as had required to be done had been done by the chief resident engineer and his staff. The third excess of which I spoke, $47,261 for bridges, arises in part from the increased size of Gascoigne Road bridge, which is due to the fact that it crosses the junction of two roads instead of crossing one of them at right angles. This increased cost is not shown in the 1907 estimates, because it was not at that time known what the cost of the iron work in England would be. The cost of the construction of this bridge has been let by contract to Messrs. Leigh and Orange as part of the agreement to which I will shortly allude. Under this head of bridges also a final decision has been taken regarding the bridge over the Taipo river, which has been a subject of much discussion, and it was finally settled by Mr. Barry. The situation in which it has been placed involves well foundations in the Taipo river, at considerably more cost than anticipated originally. It has been raised higher, owing to information which we received from the engineer of the Chinese section as regards flood levels in the Samchun valley and it has also been made with



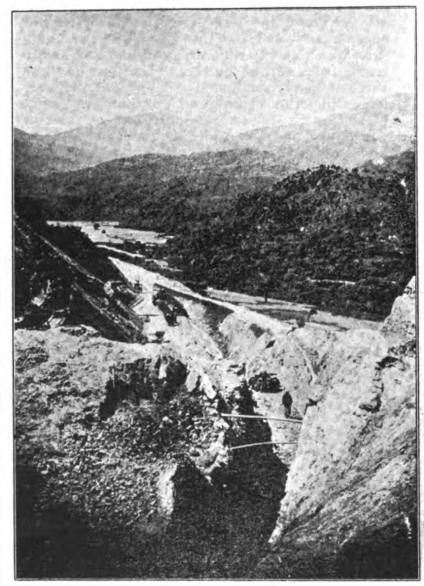


KOWLOON-CANTON RAILWAY.—STEEL GIRDER BRIDGE WITH BRICK PIERS

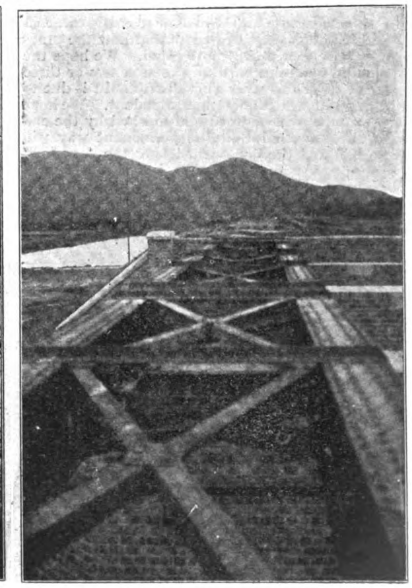
double girders for a double line. Council will desire to know whether I have any information to add to my reply of September last to a question asked me by the member who then represented the Chamber of Commerce in this Council as regards certain defective bridges. I said in reply that I had directed that an examination of the bridges in question should be held by the Director of Public Works and Mr. Williams, the engineer of the Naval Docks. Their report, together with the comments of the chief resident engineer, was forwarded to the consulting engineers and so far I have had no reply from them. The result was that Mr. A. J. Barry, who already contemplated a visit to the Far East, was directed to inspect the Kowloon-Canton Railway on behalf of Messrs. Wolfe, Barry and Co., and to report to them. His report has no doubt by this time reached them, and I await their authoritative letter before I can make any official statement to Council. But I am aware of the conclusions at which he arrived. Briefly, I can say he agreed with the eminent engineers who reported to me on that question; that he adversely criticized the principles on which one or more of the bridges had been constructed. The matter is a highly technical one, and according to the memorandum issued by the Colonial Office, technical responsibility for work undertaken by the consulting engineers rests upon them. Direct intervention by the Colonial Government is only justified in case of urgent necessity. If the Government believes the quality of the work to be unsatisfactory it will be beneficial for it to intervene. In my judgment such an occasion had arisen. Under the system upon which this railway is being constructed the consulting engineers are responsible for the conception and execution of the design in accordance with the intentions of the Government, and further responsible that the estimates are adhered to. The chief resident engineer is the nominee of the consulting engineers. He is responsible to them for the technical conduct of the work. I do not disguise from you that I have a misgiving that there will be some addition to the estimates before us in consequence of these defective bridges, but I trust and hope, with good cause, that the addition will not be a large one. You will see for yourselves what the chief resident engineer says on the subject in his report on page 4. I have dealt in considerable detail now with the items that involve excesses in the estimates. There remain those under which large savings are shown. Ballast and permanent way show an estimated saving of $51,700; rolling stock, $82,400. As regards the former you will find on page 5 a full explanation of the over estimate by the chief resident engineer, to which I have nothing to add. As regards the overestimate of the rolling stock, it is partly due to a decrease in home prices, and partly to the fact that less rolling stock than anticipated has been ordered. On Mr. Barry's advice the original order was somewhat reduced. The rolling stock is calculated to last till the end of 1911, but the resident engineer informs me that when the line is opened it will be insufficient, and will have to be augmented. We cannot, however, say exactly what quantity of rolling stock we shall require until the working agreement has been negotiated with the Chinese. I may add too, that the carriages will cost something less than half what had been estimated, for the amount placed on the estimates had been calculated on the basis of carriages for the Shanghai railway, and we find by adopting a less expensive model we can reduce the cost from about $2,000 per carriage to $1,900. As regards earthwork, under the estimate at the end of 1907, the chief resident engineer already anticipated a saving of over $140,504 on the estimate made in the previous June. Out of this saving, $35,000 will be allocated to a reduction of the bank in the big cutting at the head of Hunghom Bay. This cutting is about 210 feet deep, and the engineers consider that looking to the very pliable nature of the ground it is unsafe to allow the slip to stand without some further precautions to avoid landslips which may block the line for a period of several months. $110,000 is devoted to the prolongation of the sea wall from the storm water drain to Blackhead's Point. This had long been decided upon but was not included in the December estimates because no definite decision had been arrived at as to its exact location. It had originally been intended to make the wall in straight line to Blackhead's, but it was set back in order to effect a substantial saving by constructing the wall in shallower water. $10,000 are also required, which I hope will be met from the saving in earthwork, for cutting off the corner on Signal Hill, in order that the railway might obtain a proper curve in approaching Kowloon Station. I turn now to the more pleasant task of reporting the progress which has been made upon the railway during the past year. I think we can describe it as satisfactory on the whole with the exception,



VIEW FROM ABOVE S. PORTAL OF NO. 3 TUNNEL

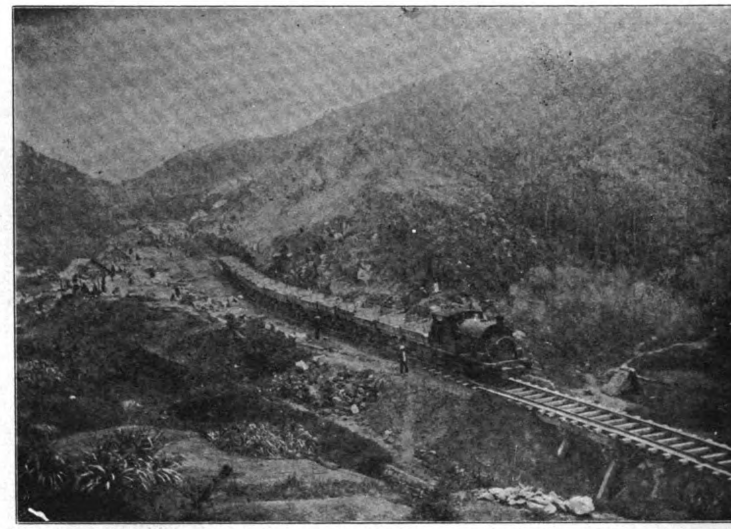


VIEW FROM TOP OF NO. 67 CUTTING WHICH IS BEING EXCAVATED IN 3 LIFTS, WITH 2 FT. LIGHT RAILWAY

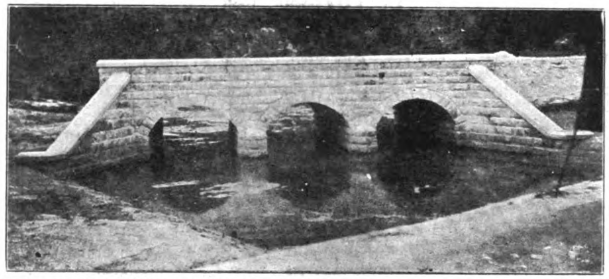


GIRDER BRIDGE

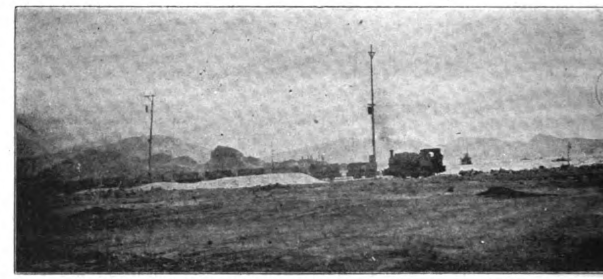
perhaps, of the big cutting at Hunghom and the reclamation for the station yard which are let to contract to Messrs. Leigh and Orange. As there was a prospect that the time for this would be much exceeded, we entered into negotiations with them in order to obtain the use of what is called the 'overland route' construction line which they have made and also in obtaining access to certain areas under reclamation in advance of the completion of the contract. By obtaining running powers over the construction line, we shall facilitate the opening of the railway at a very much earlier date than would otherwise have been possible. In return we have allowed them twelve months' extension of the time for the big cutting which, as I haye said, will not delay the opening of the railway. It will be opened over the overland route and they have consented that the penalties for exceeding the contract time shall be trebled. We have also given them two new contracts at rates which will be remunerative to them, viz. the Gascoigne Road bridge and the other in the neighbourhood of Yaumati Station. It will be possible to open the line before the big reclamations are completed. The tunnel progress has been good. On 31st December, 1907, 3,100 feet had been driven and 465 feet had been lined, and on 31st December last, 5,644 feet had been driven and 2,730 feet lined. The progress in 1907 was 40.27 feet per week. Last year it was 68.15, an increase of some 60 per cent. in spite of the fact that during the great part of 1907 we were working on four faces whereas in 1908 we were only working on two. I have already told you how greatly the cost per foot has been decreased and how the progress has been much more rapid. We hope the headings will meet within the next two or three days. For this work very great credit is due to Mr. Waite, the tunnel superintendent. We hope the tunnel will be lined and finished by the end of the year and that the permanent way will be laid and the line opened over the 'overland route' by May, 1910. We found it advisable to have a small flag station at Taipo market in order to attract some additional traffic, and a small station will also be built at Lo-fu ferry near the frontier. None of these items were included in the original estimates. I may also say that the jetty at Taipo will be lengthened so as to carry it into deep water, and by this we hope to acquire considerably more traffic from across the bay. The cost of these three items is small and will be met, without increasing the estimates, by abolishing high platforms at the small intermediate stations which are not considered necessary. After much discussion with Mr. Barry when he was here, it was decided that the small workshops which would be necessary should be placed on Crown land at the head of Hunghom Bay. It is considered that the building and plant will not cost more than $120,000, which is now included in the estimates. After much discussion it was also decided to locate the terminal station of land near Salisbury Road, where it would be near the various piers where passengers and baggage would be landed, and more central. It would leave the deep water anchorage free for ocean going steamers. This will involve some land resumption which I think well worth doing in order to acquire the advantages which I have just named. It is not possible to say what the cost of these resumptions will be because it will involve a considerable amount of adjustment between the Colonial Government and the railway accounts. The report of the



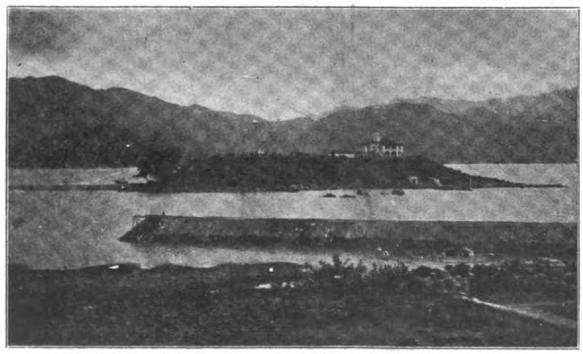
KOWLOON-CANTON RAILWAY.—TAKING THE TOP LIFT OFF THE CENTER OF CUTTING NO. 1. FORMATION LEVEL IS ABOUT 30 FEET BELOW THE RAILS



KOWLOON-CANTON RAILWAY.—CONCRETE BRIDGE, CUT STONE FACING



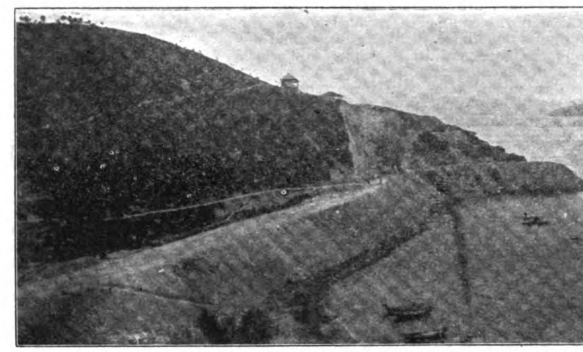
KOWLOON-CANTON RAILWAY.—CONSTRUCTION TRAIN



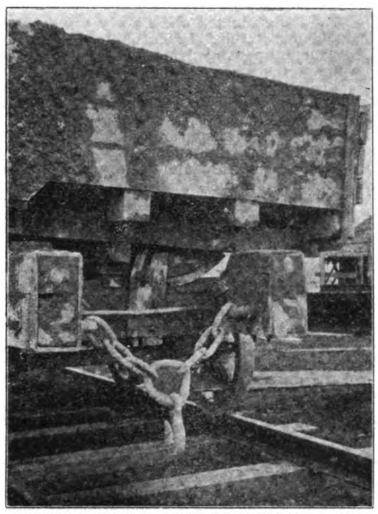
KOWLOON-CANTON RAILWAY.—LAND FILL AT TAIPO

KOWLOON-CANTON RAILWAY.—TAIPO CITY

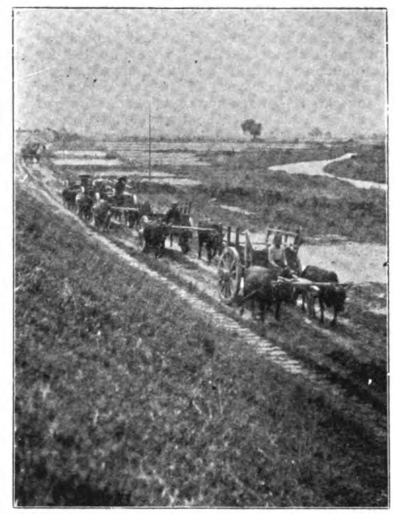
KOWLOON-CANTON RAILWAY.—CUT NEAR TAIPO



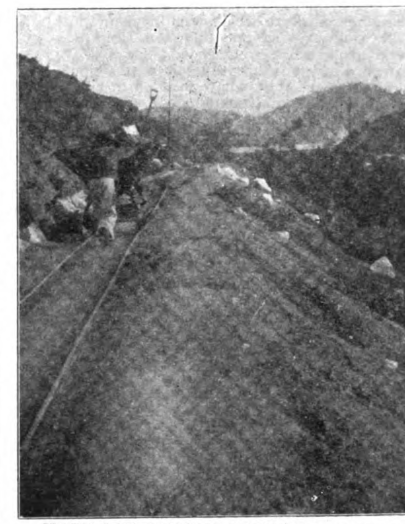
KOWLOON-CANTON RAILWAY.—SEASIDE EMBANKMENT AND CUTTING NEAR TAIPO



KOWLOON-CANTON RAILWAY.—CONSTRUCTION CAR



KOWLOON-CANTON RAILWAY.—HAULING BRICK BY OX CARTS

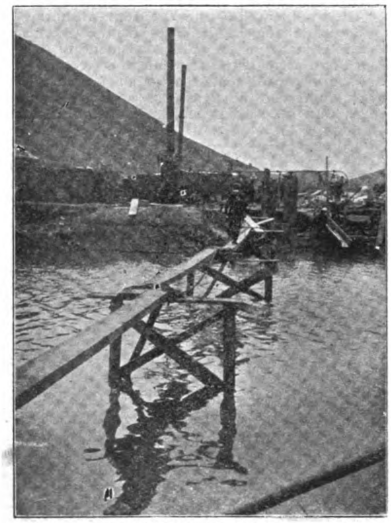


KOWLOON-CANTON RAILWAY.—COOLIE PUSHING CAR

medical officer is very satisfactory. Beri-beri, and dysentery at the tunnel have decreased by 50 per cent. This is due to better organization and to better methods. The number of coolies employed on the railway throughout the year per day was 3,244. Both sections—our section and the Chinese section, are now well advanced, and we hope before long to undertake negotiations for a joint working agreement. I think, gentlemen, that covers all points on which you are likely to feel interested in the work during the past year and the prospects in the future."

Following His Excellency's statement, there was much comment in the Hongkong press tending to intimate that mismanagement has been responsible for the doubling of the original estimates. In order to throw additional light on the subject and remove this impression the Hon. Murray Stewart, Chairman of the Committee of the China Association, addressed the following letter to the Editor of the *Hongkong Press*:

"SIR:—The Committee of the China Association conceive it to be in the public interest to endeavour to dissipate an erroneous impression that Hongkong is being called upon to pay for the Colonial section of the Kowloon-Canton Railway considerably more than the work is worth. The prevalence of this impression is indicated by certain Press comments upon His Excellency the Governor's speech in Council on the increased estimates. From the general tone of these it might almost be assumed that



KOWLOON CANTON RAILWAY.—CAISSON WORK FOR BRIDGE AT LO-FU FERRY

mismanagement had led to the doubling of the legitimate cost of construction.

"There appears to be a popular idea that the original estimate was for some 5 million dollars; that the work ought not to have cost much more; but that gradually, owing to a series of blunders, the figure has risen to 11 millions. This belief that the cost has been doubled by mismanagement has naturally let to severe criticism being directed against those responsible for the undertaking. I venture to submit that it is not borne out by the full circumstances of the case.

"The first important fact to note is that the estimate of 5 million dollars was a mere rough estimate made by Mr. Bruce on his original survey. The line beyond Shatin, as planned by him, was a single line throughout, to run along the edge of the sea shore from Lokloha to Taipo.

"The alignment which he proposed, and on which this rough estimate was based, had subsequently to be altered because the typhoon of September 1906 showed the shore edge to be unsafe. That typhoon was a revelation in many ways. It taught several lessons to others besides railway engineers, and there is no particular blame attaching to anyone for not having foreseen the possibilities of destruction reposing in the sheltered waters of Mirs Bay. If we can all now see that Mr. Bruce's original alignment was a mistake, we ought in fairness to remember it was at least excusable under the circumstances.

"The change in the alignment, removing the track out of reach of the sea, entailed much heavy cutting not contemplated by Mr. Bruce and the boring of three additional tunnels, of which that undertaken at Taipo is in itself a considerable enterprise. It is also important to remember that it was subsequently decided to build all bridge cuttings, and the three additional tunnels, wide enough to admit of a double track being laid, should the necessity for that hereafter arise. Mr. Bruce had not made provision for costly developments of this sort. It was not his business to do so. His business, as described by His Excellency the Governor in the Legislative Council on the 6th February, 1908, was 'to make a preliminary survey and to base upon it a preliminary estimate.' How rough an estimate it was may be gathered from His Excellency's comment upon it in the same speech, in relation to the cost of earthwork. He said 'it is difficult to know exactly what rates Mr. Bruce had calculated at, because no drawings or calculations of quantities rates were supplied with the estimate.' In justice to Mr. Bruce it should not be forgotten that the first and by far the most important duty which fell upon him was to decide upon the main route of the railway. At one time the Deep Bay route had been recommended. He had to determine which of three different routes should be adopted, and it stands to his credit that his decision on this vital point has been generally admitted to be sound.

"The first detailed and authoritative estimate made was that submitted by Mr. Eves in his report dated 4th February, 1908, and laid before the Legislative Council on the 22nd of the same month. If this estimate is compared with that made by Mr. Bruce, it will be seen that the increase is mainly due to five factors:

The estimates for land resumption was increased by	$1,186,038
For earthwork by	729,003
For tunnels by	578,555
For bridges by	620,927
While the expenditure on Plant, Rolling Stock, Salaries (for which Mr. Bruce had made no estimate at all) was estimated by Mr. Eves at	1,191,647
Total	$4,306,170

"The reasons for the increase in these items have already been alluded to, with the exception of that due to land resumptions in Kowloon, incidental to new and larger ideas of what will be required the terminus. Over and above this there remains an increase of roundly $500,000—accounted for by increases under the other subheads.

"With regard to the difference between Mr. Eves' estimate, dated 4th February, 1908, and his estimate dated the 9th March last, and laid before the Legislative Council at its last meeting, the excess of the latter over the former is just under $1,150,000. Of this nearly $1,000,000 is due to increased expenditure on Beacon Hill Tunnel. The net increase on the remaining items, as compared with Mr. Eves' first estimate is just under $150,000—not a very formidable sum. One reason for the increased cost of Beacon Hill tunnel is to be found in the varied character of the excavation, and another in the phenomenal hardness of the rock met with in parts of the hill, necessitating the use of specially heavy drills, and an enormously increased use of explosives.

"The fact that the estimates have been exceeded a common experience in all such undertakings should not be interpreted to mean that the work could have been executed for less. Unless this can be proved there is no justification for thinking that the Colony has so far suffered any loss except on paper.

"The members of my Committee have no valid reason to suppose that the cost of the actual work done is excessive, and, this being so, they protest against the advocacy of the belief that there has been 'gross mismanagement' in the construction of the British section of the Kowloon-Canton Railway."

On May 17, 1909, three days after the Governor's speech, the famous Beacon Hill tunnel was pierced, a triumph to British engineering and representing 28 months work against almost insurmountable obstacles.

The prospect is that the British Section of the Canton-Kowloon Railway will be completed by May, 1910, if not before that date. In discussing the 1910 budget, October 8th, His Excellency reported the completion of the lining, etc., of the big tunnel to the length of 4,935 feet and at the rate at which the work was proceeding he expected its completion about that time. This will be the signal for the opening of the railway to traffic. In the meantime the Chinese section will have been completed for over 30 miles from Canton.

THE CANTON-KOWLOON RAILWAY

(THE CHINESE SECTION.)

The following report on the progress of the work on this line, prepared by Mr. Frank Grove, the Chief Engineer, was submitted in April of this year Beyond this report there is little further to add, as progress has been slow, owing to the difficulty of securing rights of way. The surveying engineers have been repeatedly driven off, as the natives do not take kindly to the idea of the line through their fields, and disturbing the "Fengshui." Work is now practically at a standstill.

"The final agreement between the Chinese Government and the British and Chinese Corporation, who are building the railway, was signed on March 7, 1907.

"His Excellency Wei Han, being appointed managing director, facilities were afforded for the commencement, at the end of August, 1907, of a detailed survey and of the actual location of the line. Provisional arrangements had already been made by the British and Chinese Corporation, at the request of the Chinese authorities and the engineer-in-chief, for an adequate foreign staff; and from August 25, 1907, fully equipped survey parties were at work, the head office, temporarily established at Shameen, being under the direction of the managing director, the engineer-in-chief, and the chief accountant, under terms of the Loan Agreement.

"THE CANTON TERMINAL.—The Canton terminal has been established at Taishatow and is thus conveniently situated at the end of a roadway which will eventually pass throughout the entire length of the water frontage of Canton, east of Shameen. A considerable area of land has been acquired at Tungshan, rather more than one mile from Taishatow for the provision of permanent residences for the foreign and Chinese staff, and also for sheds and workshops. The terminal station at Taishatow will be a double-storeyed building providing full accommodation for the permanent general office. There will also be sufficient sidings and store sheds to deal with freight.

"A connexion with the Yueh-Han Railway will be made to the northward of the city. No difficulties will be encountered in the construction of this connecting link.

"The total length of the line from Taishatow to Samchun (on the frontier of the British leased territory) is 89 miles, considerably less than was anticipated at the time of a reconnaissance survey made some ten years ago. Allowing 22 miles for the British section, the total length thus becomes 111 miles from Canton to Kowloon.

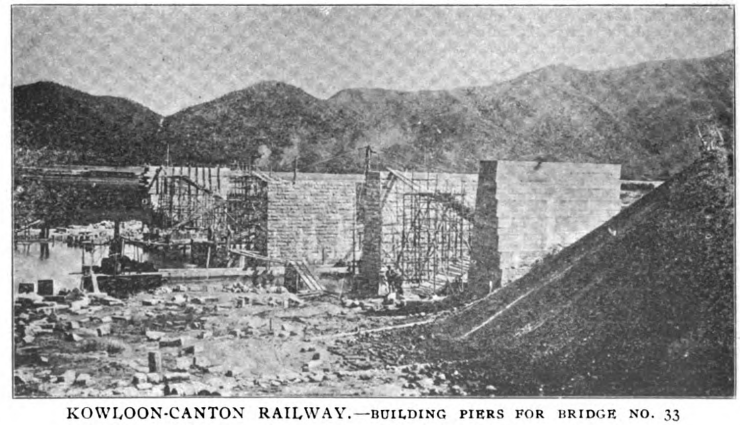
"The heaviest bridging occurs at the crossing of the East River Valley, and for some ten miles or more rails are carried at an average level of some 16 ft. above the level of the rice land. In a length of eight miles they had a total girder opening of some 3,000 feet, and during highest flood times the country became a huge lake with a depth of water averaging ten feet or more. Some heavy earthwork is encountered in the portion between Shekma and Samchun. Generally speaking, there are works of considerable magnitude in a large portion of the line, the proportion of major bridges being large for so short a railway.

"The route adopted offers every prospect of considerable traffic. From Canton to Sheklung there are many large villages, especially on the northern bank of the river, and the railway will provide, with its numerous stations and 'halts,' ready access to the Canton and Hongkong markets. A large quantity of lichees, sugar cane, oranges, and other fruits are grown annually in this district, which may be described as richly cultivated and prosperous. The commanding position of Sheklung on the East River and its trade as a distributing centre are well-known. The station and goods yard will be near the town, and considerable passenger and freight traffic is assured.

"South of Sheklung to Samchun a direct route has been obtained through a fine country, mountainous in many places, rather thinly populated, but fertile and capable of considerable development. The lower hills are inhabited by Hakkas, and large quantities of fruit, especially pineapples, and vegetables find their way from this district into the Canton and Hongkong markets.

"The survey was sufficiently far advanced for land purchasing operation to commence at one or two points of the line in December, 1907, and further sections of land plans were deposited in March, 1908. Land officers, however, found many difficulties to contend with, and it was not until July that considerable lengths of land were made over. Construction proper dated from July, 1908, thouh certain small sections of land were entered upon before that month. During succeeding months, land purchase made better progress, though the rapid extension of works was delayed, the present condition being that out of a total length of 89 miles about 50 miles are purchased and entered upon.

"In regard to this delay, it must be remembered that the rapid acquisition of large areas of land in the Kwangtung province presents a difficult task to Chinese officials, and care has



KOWLOON-CANTON RAILWAY.—BUILDING PIERS FOR BRIDGE NO. 33

to be taken to avoid serious disturbances, especially in dealing with the removal of graves, tombs, and temples. With the exception of some comparatively trivial affairs, it is a matter for congratulation that land purchase has proceeded to the extent indicated without great friction between officials and inhabitants, who are notorious in many districts for their exceptionally truculent and determined natures, and that the safety of foreign engineers under trying conditions has not caused greater anxiety.

"The construction of earthworks is at present proceeding over, or will shortly proceed over, the extent of land purchased, and fair progress is maintained. Bridge work is well in hand over considerable lengths. The works of the most importance and likely to entail the greatest delay to a through connexion are the large bridges at the crossing of the East River Valley. A satisfactory start is being made on foundation work, and there is no reason to anticipate greater delay in the opening of the line for through traffic than the nature of the work to clinch matters with the Waiwupu. Long negotiations followed, and, as mentioned above, the document that gave life to the agreement concluded in principle in 1898 was not signed until 1907.

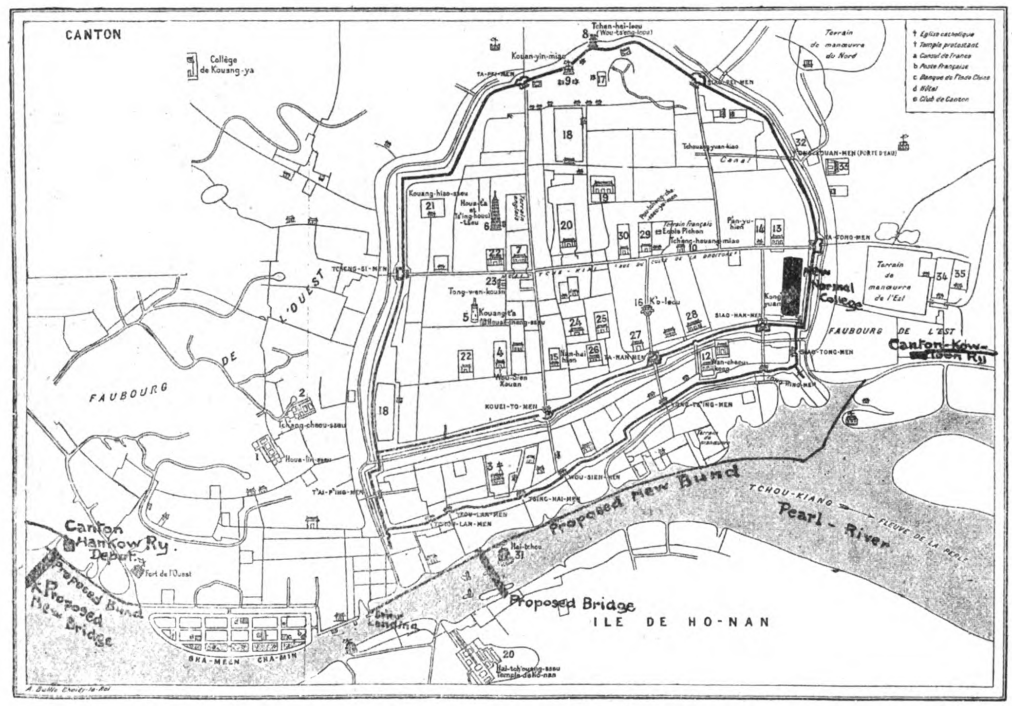
"The general financial terms under which the railway is being constructed are similar to those stipulated for the Shanghai-Nanking Railway. They provide for the issue of a sterling loan of £1,500,000, bearing interest at 5 per cent. The loan is guaranteed by the Chinese Government, and secured on the railway to be built. The administration of the railway is vested in 'a Chinese managing director (appointed by the Viceroy), with whom are associated a British engineer-in-chief and a British chief accountant.'

"The depot will be at Tung Shang, a mile away from the terminus and the main station. At Shekwaitong the line will connect with the Hankow railway. There will be three lines from the No. 1 bridge—a main line and two sidings. The platform itself will be 800 ft. long by 30 ft. wide.

maintenance engineer, a general drawing and drafting room, together with a large light area for the staircase of iron in the centre. On the second floor is a big dining room, mess room, kitchens, printing and drawing room for plans, wash rooms for the printing, etc., with a promenade outside. The whole building is covered with a flat concrete roof of re-enforced malthoid.

"The building is severely plain so as to be in keeping with most railway structures, and will be relieved with Doric columns. The fittings throughout are of teak wood, with plate glass windows. The hardware necessary will be imported.

"A great feature of the place is the small curtain walls of re-enforced concrete, which thus economise space. The building will have its own water supply and electric light installation, with arc lamps on the platform. Messrs. Purnell and Paget are the architects, and Hop Woo are the contractors. The foundations—which are of re-enforced cement concrete on piles—were started in January, 1909, and it



MAP OF CANTON SHOWING RAILWAY TERMINUS

naturally involves. The rate of construction of the heavy earthworks and culverts on part of the line south of Shek-lung, where water transport facilities are absent, is necessarily not so fast as it would be in an open and easily approached country-side.

"A careful estimate anticipates the opening to traffic of a 30 miles' section from Canton outwards in March, 1910, and a through connexion with Kowloon on or about July 1, 1911.

"British merchants in Hongkong and in Southern China generally will then have the satisfaction of seeing consummated a scheme long and ardently advocated. As far back as 1898 the necessary concession was obtained, together with four other railway concessions, from the Chinese Government by Sir Claude MacDonald, just after the Belgian syndicate were given leave to build the Peking-Hankow line. But the project hung fire. It was only after the construction of the Kowloon part of the line under purely British auspices was well under way that the British and Chinese Corporation, to whom the concession had been made, tried

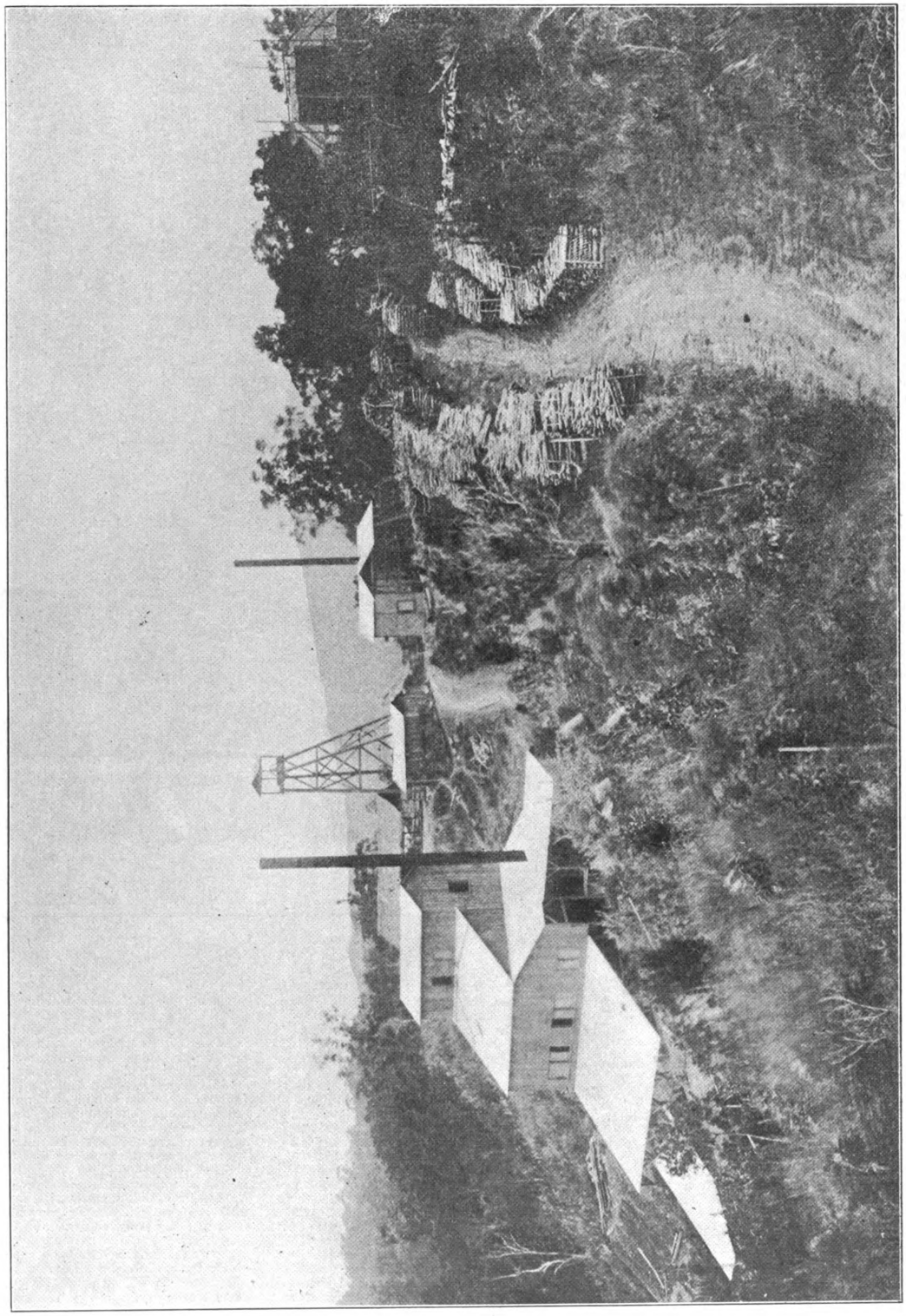
"The station building—the foundation stone of which was laid by H. E. the Viceroy—is of reinforced cement concrete, with brick facings. The walls, floors, columns, roofs, and partitions are all of reinforced concrete with Green Island Cement. The size of the building is about 170 ft. by 60 ft. and will be of three storeys.

"The ground floor contains the main entrance, about 60 ft. by 40 ft., leading directly on to the platform. Here there will be the booking, telegraph, traffic, and station master's offices, together with the necessary railways and enclosures for the different classes of passengers. There are the mandarin waiting rooms, refreshment rooms, traffic and accounts department, traffic manager's office, ladies' waiting room, a large parcels' office—40 by 20 ft. and the usual lavatory accommodation. There will be re-enforced concrete stairs on either side of the building leading to the first floor, on which are the managing director's and secretary's offices, as well as for their clerks, the accountant and assistant accountant's department, offices for the manager and engineer in chief, the

is hoped to finish by contract time in March, 1910.

"The whole of the floor will be covered with Chinese and imported English tiles, and, we need hardly say, the building will be fire-proof. It is worthy of note also that the bricks are of a new kind, being Kwangtung bricks, of local manufacture. They have a nice glaze, have stood a severe test, and supply a long felt want in building construction in Canton and the neighborhood. They are made by the Chinese Government, on the Honam side, under the superintendence of Taotai Lu. The cost of the Amoy bricks—which up to now have been in demand—made building very costly, as the freight was no mean figure. Now that a good local brick is in the market, it is felt that not only will satisfaction be guaranteed but an incentive may be given to building construction and therefore to the extension of a local industry.

"On the recommendation of the Chief Engineer the contract for all the rails for this line has been placed with the Hanyang Iron & Steel Works."



SAN MAURICIO MINES

One of the most important undertakings in Philippine quartz mining has just reached the stage of assured success. This is the operation of the "San Mauricio" mine located at Mambulao in the Province of Ambos Camarines on the Pacific coast of the Island of Luzon. Here there is a fine deep-water harbor in which large vessels can anchor within a quarter of a mile of the shore. The mine shaft is two-thirds of a mile from tide-water. The properties have an area of about 270 acres.

A twenty-stamp mill from the Traylor Manufacturing Company is practically completed and will be running in the early part of the coming year. It is the largest crushing plant in the Philippine Islands. The method of handling the ore and the extraction of values is of particular interest. After the ore is broken down into chutes, it is run into cars and trammed to the shaft which is equipped with a sixty-five horse-power hoist of the Lidgerwood type. It is then hoisted to the surface and trammed from there to the grizzly and crusher floor of the mill building, the "fines" going through the grizzly and the "oversize" going to the crusher where they are reduced to an inch and a half ring From this point all the ore is handled by gravity. After leaving the crusher it enters the bin which has a capacity of 150 tons. From the bin it is introduced to automatic feeders that feed the ore to the stamps, of which there are four batteries of five each with a weight of 1,050 lbs. per stamp. It is there crushed so that it will pass through a 30-mesh screen. Before the ore leaves the batteries a certain amount of the free values are amalgamated inside of the batteries. The rest of the free gold is caught on the copper plates in front of the screen. The pulp from the copper plates is run into launders which carry it to the classifier, where the pulp is classified into three different sizes and distributed from there by launders to the six Traylor concentrating tables on the first concentrating floor. The "middlings" from these six tables are conducted to the lower concentrating floor which contains two tables and are re-concentrated there. The sands or tailings are then run off on to a dump and stacked there for future disposal.

The average value of the ore as reported upon by five engineers, H. W. L. Way, Carnegie Williams, E. Voigt, Charles Schneider and Washington B. Vanderlip, is one ounce and sixteen grains per ton. The cost of handling this ore, that is, mining, milling, concentrating, shipping of concentrates, smelting charges and development work on the mine, should not be over five dollars per ton of ore handled. It is expected that the mill will crush about eighty tons per day.

The plant includes a well equipped assay office under a competent man who is devoting his time to work out a method of treatment whereby the values may be recovered without smelting. The superintendent in charge is Mr. D. E. Blake, an engineer well-known in the mining world, in whom the officers of the company place entire confidence.

Philippine Exploration Company.—The San Mauricio mine is controlled by the Philippine Exploration Company, incorporated in the United States in 1908. Its head office is at No. 97 Water Street, New York City, with a branch office at No. 32 Plaza Moraga, Manila.

The officers of the company are: Mr. F. H. Henry, President; Mr. James Cochran, Vice-President; Mr. Vivian L. Outerbridge, Secretary-Treasurer; Mr. A. Heise, General Manager. The other directors are Mr. Howard Gilbert and Mr. Halsey R. Carpenter.

The object of this company is to undertake the financing of promising mining properties, either quartz or placer. Its method of operation is to take over a property from the owners under a contract to develop it and, in case the development work should justify it, to install machinery.

When a completely equipped plant is at work, the Exploration Company turns it over along with the mines to an operating company organized to acquire and work them and retires from the active management of the property, but retains as its share a control of the stock of such operating company.

With the "San Mauricio" off its hands the Exploration Company is starting in to develop two other promising properties in the same district, one of which is placer and the other quartz.

Batobalani Dredging Group.—This property comprises 760 acres and is situated on the Malaguit River in the well-known Paracale mining district. It is about eight (8) miles distant from the San Mauricio mine. The lower end of the group is just at the head of tide-water at a distance of about six miles from the sea. Materials for the building of dredges can easily be lightered or floated to this point.

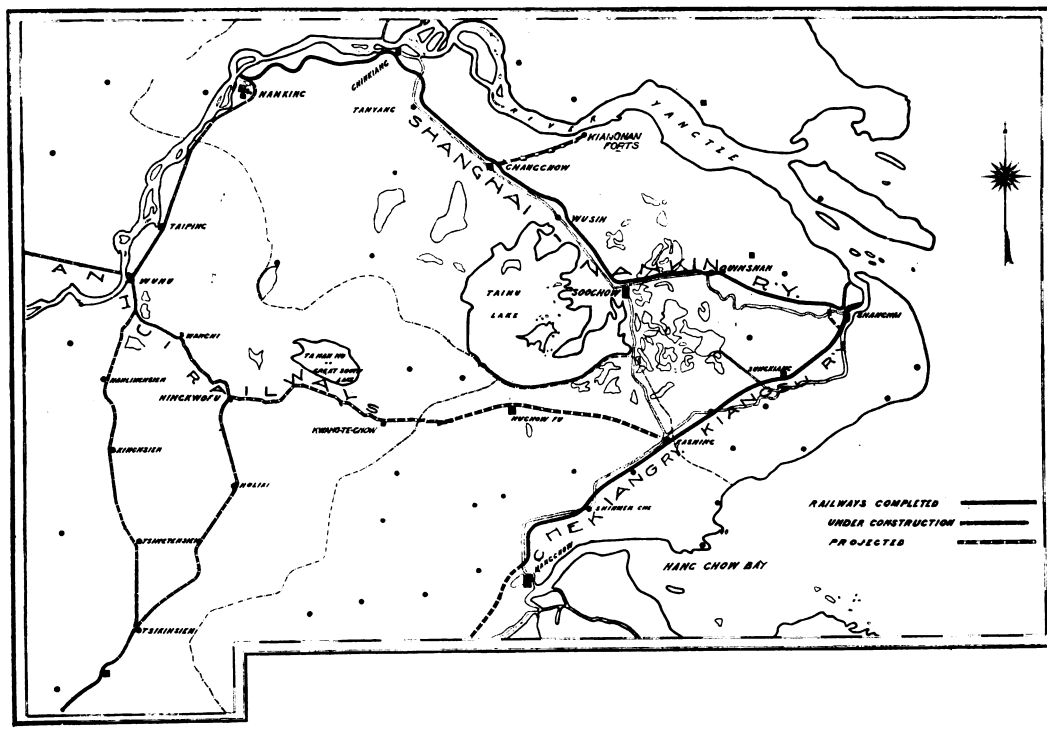
From 260 boring tests made on this ground the average per cubic yard of the dredgeable area is given as twenty-four cents, United States currency. The tests were made with a hand boring machine and it is the consensus of opinion of most mining men that this apparatus will not save the values in the sample taken by one-third, which means that it would be safe to figure upwards of thirty cents per cubic yard. The aforementioned tests show the overburden to be handled to range from two to seven feet and the gravel or "wash" from thirteen to twenty-one feet. This fixes the maximum depth of the dredgeable ground at twenty-eight feet and the minimum depth at fifteen feet, which are ideal conditions for dredging. The entire area has not been proven up to date, but tests are being pushed as fast as possible and a dredge will be ordered in the near future. The Exploration Company has bonded this property for eighteen months.

Robinson Group.—The Robinson Group is a tract of about 850 acres of mineral-bearing ground which forms an ell around the San Mauricio Group, virtually making both properties one.

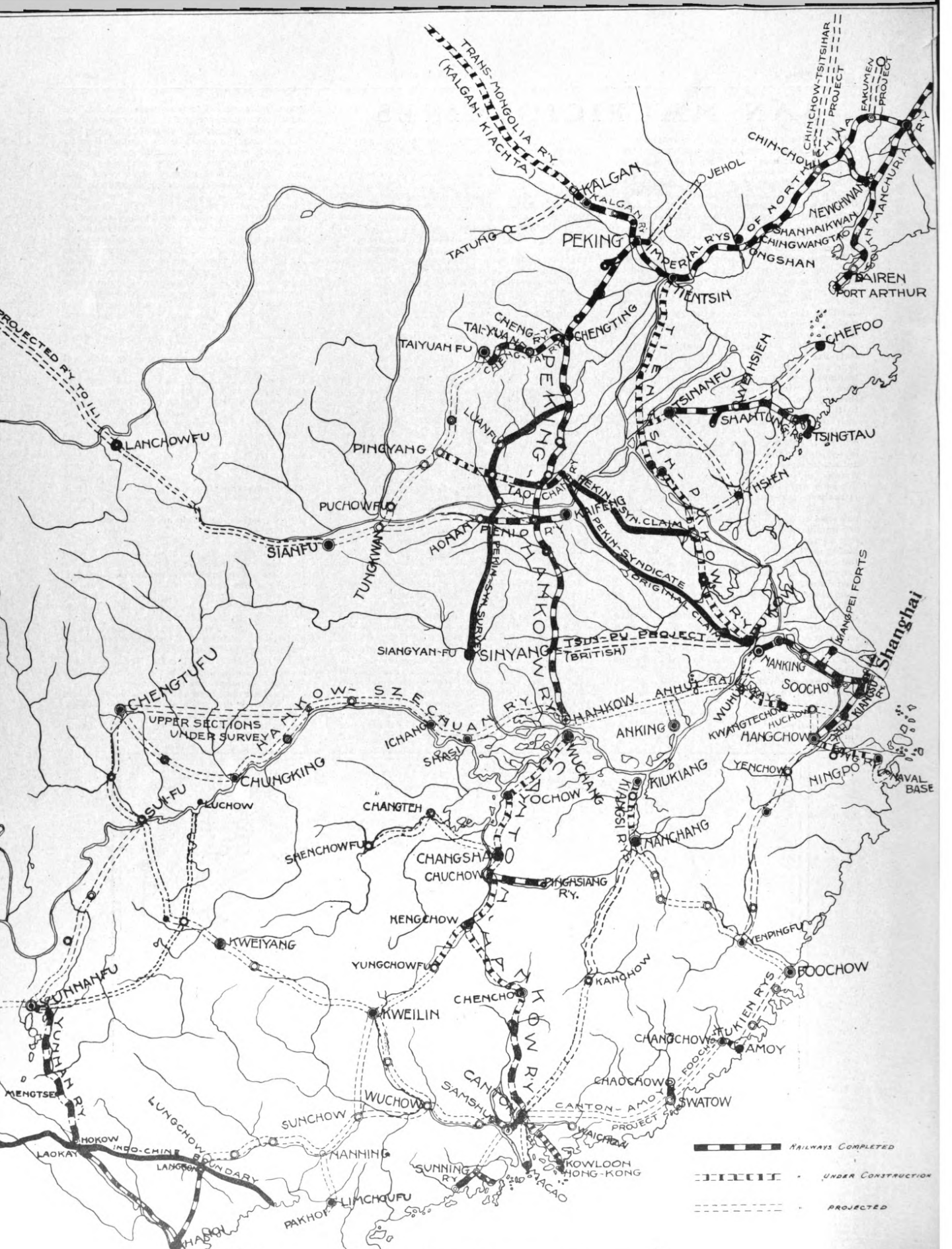
There have been numerous shafts sunk and adits driven by native miners in the past on the Robinson Group, the lines of old workings extending parallel from the Northeast to the Southwest all over the group. This property is now being surveyed and active development will start on the same at the beginning of the coming year. The Exploration Company has a three year working bond on this group, guaranteeing to spend a fixed sum monthly and at the end of the lease to install such machinery as the development work at that time justifies. This property has the making of some very large mines. It is as yet only in the "prospect" stage, but from all surface indications it will justify the expenditure of considerable time and money.

Mr. A. Heise, the general manager, and one of the directors of the company, sailed from Manila recently for Shanghai where great interest is being taken in Philippine mining development. While nothing has been given out as to his purpose there, it is believed that some of the leading Shanghai capitalists may become interested in the different promising enterprises of the Exploration Company. It is understood that all the necessary capital for the development of the properties referred to is available in New York but Mr. Heise, it is said, is anxious to interest local Far Eastern capital as much as possible in these ventures.

Mr. Heise has been the most successful and conservative promoter of Philippine mining, and there is little doubt but that Shanghai capitalists will be impressed with the opportunity and take a "look see" at these properties.



KIANGSU CHEKIANG RAILWAYS



TRANS-MONGOLIA R'Y (KALGAN-KIACHTA)
KALGAN
KALGAN R'Y
JEHOL
TATUNG
PEKING
IMPERIAL R'YS OF NORTH CHINA
CHIN-CHOW
CHINCHOW-TSITSIHAR PROJECT
FAKUMEN PROJECT
NEWCHWANG
SOUTH MANCHURIA R'Y
SHANHAIKWAN
CHINGWANGTAO
TONGSHAN
DAIREN
PORT ARTHUR
TIENTSIN
CHENGTING
TAI-YUAN R'Y
TAIYUAN FU
CHEFOO
TSINANFU
WEIHSIEN
SHANTUNG R'Y
TSINGTAU
PROJECTED R'Y TO ILI
LANCHOWFU
LUANFU
PINGYANG
PEKING-HANKOW R'Y
TAO-CHANG R'Y
PEKING-SYN. CLAIM
PEKIN-SYNDICATE ORIGINAL CLAIM
PUKOW R'Y
PUCHOWFU
KAIFENG
SIANFU
HONAN
PENLO R'Y
TUNGKWAN
PEKIN-SYN. SURVEY
SIANGYAN-FU
SINYANG
TSIN-PU PROJECT (BRITISH)
KIANGPEI FORTS
Shanghai
NANKING
SOOCHOW
KIANGSU R'Y
CHENGTUFU
HANKOW-SZECHUAN R'Y
UPPER SECTIONS UNDER SURVEY
ICHANG
SHASI
HANKOW
ANHUI RAILWAYS
WUHU
KWANGTECHOW
HUCHOW
HANGCHOW
ANKING
CHUNGKING
WUCHANG
YENCHOW
NINGPO
NAVAL BASE
KIUKIANG
SUI-FU
LUCHOW
CHANGTEH
YOCHOW
KIANGSI R'Y
NANCHANG
SHENCHOWFU
CHANGSHA
CHUCHOW
PINGHSIANG R'Y.
HENGCHOW
KWEIYANG
YENPINGFU
YUNGCHOWFU
FOOCHOW
KANCHOW
YUNNANFU
CHENCHOW
KWEILIN
TUKIEN RYS
CHANGCHOW
AMOY
YUNNAN R'Y
MENGTSE
CANTON
SAMSHUI
CHAOCHOW
SWATOW
CANTON-AMOY PROJECT
WUCHOW
SUNCHOW
LUNGCHOW
HOKOW
LAOKAY
INDO-CHINE BOUNDARY
LANGSON
NANNING
WAICHOW
KOWLOON
HONG-KONG
SUNNING R'Y
MACAO
LIMCHOUFU
PAKHOI
HAIPHOI
RAILWAYS COMPLETED
UNDER CONSTRUCTION
PROJECTED

1982 10128

SUPPLEMENT TO
THE FAR EASTERN REVIEW

China's Foreign Railway Agreements

NOVEMBER, 1909.

GREAT BRITAIN

FINAL AGREEMENT BETWEEN SHENG KUNG-PAO, DIRECTOR-GENERAL OF THE IMPERIAL CHINESE RAILWAY ADMINISTRATION, AND THE BRITISH AND CHINESE CORPORATION, LIMITED, FOR THE ACQUISITION OF A LOAN FOR THE CONSTRUCTION OF A RAILWAY FROM SHANGHAI TO NANKING.

This Agreement is made the 15th day of the Intercalary month of the 29th year of Kwang-Hsu, corresponding to the 9th day of July, 1903, at Shanghai, and the Contracting Parties are:—

The Director-General of the Imperial Railway Administration, Sheng Kung-Pao (to be called hereafter Director-General), acting under authority of an Imperial Decree, of the one part, and Messrs. Jardine, Matheson & Company, and the Hong Kong and Shanghai Banking Corporation, representing as Joint Agents the British and Chinese Corporation Limited (hereinafter called the Corporation), of the other part.

Whereas, on the twenty-third day of the Intercalary third month of the twenty-fourth year of Kwang-Hsu, being the thirteenth day of May, 1898, a preliminary Agreement was signed at Shanghai between the Director-General of the Chinese Imperial Railway Administration, Sheng, acting under instructions from the Tsungli Yamen, and the British firm of Jardine, Matheson & Company, for themselves and on behalf of the Hong Kong and Shanghai Banking Corporation, representing as Joint Agents a British Syndicate, and

Whereas, on the 12th day of December 1902, an Imperial Decree was issued in the following terms:—"In view of the important considerations connected with the construction of railways in various parts, a Decree has already been issued apportioning the responsibility for the duties connected therewith. Hereafter the accounts of receipts and disbursements are to be prepared by Sheng Hsuan Huai, and communicated by him for the examination of the High Authorities of the provinces through which the railways pass, and subsequently for submission in a joint memorial to the Throne. When a line of railway has been surveyed, before the work may be begun, plans and specifications must be communicated to the High Authorities above-mentioned, who will depute an official to ascertain that there are no objections. Should Sheng Hsuan Huai enter into any agreement with a foreign Syndicate he must before signing such Agreement obtain the assent of the High Provincial Authorities, and a copy of such Agreement must be submitted to the Throne in a joint memorial," and

Whereas, on further consideration it has been found necessary to make certain alterations in the aforesaid preliminary Agreement, now therefore it is agreed that this final Agreement shall be substituted for the preliminary Agreement above referred to.

Article 1.—The Corporation agrees to issue on behalf of the Railway Administration, a sterling loan (hereinafter referred to as the loan) for an amount not exceeding £3,250,000 sterling, on the terms and conditions hereinafter contained. Imperial Chinese Government bonds are to be issued for the entire sum, similar to the bonds of the Imperial Railways of North China, with the Railway as first mortgage security therefor. The loan shall be issued in two or more parts, and each series is to be in such amount as the Engineer-in-Chief may determine under direction of the Director-General and the Corporation, in accordance with the extent of the work to be undertaken, so as to prevent the Chinese Government from suffering undue loss of interest. The price agreed upon for the loan is 90 per cent. of the nominal value, and any loss or profit in selling these bonds to the public shall be borne by or go to the Corporation. The interest on the bonds shall be at the rate of 5 per cent. per annum on their nominal value, and be payable half-yearly.

The duration of the loan is fixed at fifty years, commencing from the date of the ratification of this Agreement, but no interest will be paid on any bonds which may be redeemed or cancelled under the terms hereinafter mentioned after the redemption or cancellation thereof.

On the face of each of these bonds shall be expressed the value thereof in the sum of £100, or in such different amounts as the Chinese Minister in London in consultation with the Corporation may sanction.

If any of the bonds or net profit certificates hereinafter mentioned are lost or destroyed a reissue of any thereof is to be made in the amounts respectively called for by such lost or destroyed bonds or certificates, but proper proof of the loss or destruction must be given in the usual form to the Corporation and the Chinese Minister in London for examination and record, and the requisite guarantee is to be obtained by the Corporation from the respective claimants concerned.

Article 2.—The proceeds of the loan are to be used in the construction and equipment of the railway, and in paying interest on the loan during the course of construction.

The Corporation shall build and equip as economically as possible in accordance with the best modern system, the line from Shanghai to Nanking, it being hereby agreed that the Chinese Administration shall secure the necessary land for a double line of railway for the whole distance, as well as other facilities for the purposes of the construction and working of the line.

When the line is completed, if there is a surplus from the sale of bonds, the said surplus shall be at the disposal of the Chinese Government for redeeming the bonds, or to be placed through the Director-General in a bank on deposit for the purpose of paying interest on the loan or for developing business beneficial to the Shanghai-Nanking Railway, all to be arranged at the proper time between the Director-General and the Corporation. Should Chinese themselves build branch lines to act as feeders to this railway, it is understood that the system of construction and equipment thereof shall be adopted by such branch lines in order to facilitate through connection.

In all matters relating to the construction and administration of the railway by the officials of the British and Chinese Corporation it is expressly agreed that particular heed shall be paid to the opinions, habits, and ideas of the Chinese people, and that when practicable Chinese shall be employed as far as possible by the Board of Commissioners in positions of trust and responsibility in connection with the railway.

In regard to the earthwork or such other work as Chinese are competent to perform, contracts shall be entered into for such work with Chinese under the sanction of the Director-General or his deputy, said work itself to be in accordance with plans and specifications of the Engineer-in-Chief, and under his supervision.

In the further and final survey detailed plans and estimates of cost, whether of the respective sections of the main line or of any extensions, branches, or alterations of the same, are to be submitted to the Board of Commissioners for the approval of the Director-General.

Article 3.—The loan shall be secured by mortgage now entered into in equity, and shall as soon as possible hereafter be secured by a specific and legal first mortgage in favor of the Corporation upon the railway now completed between Woosung and Shanghai, and also on all lands, materials, rolling-stock, buildings, property, and premises of every description purchased or to be purchased by the railways herein referred to, and on the last-mentioned railways themselves as and when constructed, and on the revenue of all descriptions derivable therefrom.

The provisions of this Article in respect of the mortgage are to be construed and treated as of the same purport and effect as a mortgage customarily executed and delivered in England to a trustee for the purpose of securing loans and bond issues upon railway properties.

Article 4.—According to Article 1 of this Agreement it is provided that the loan is to be paid in instalments from time to time as the work proceeds. It is hereby agreed that within eight months after this Agreement is officially signed and ratified the Corporation shall pay the first instalment to meet the requirements for the work, whether the proceeds come from the sale or hypothecation of the bonds or from advances made, provided the appropriate series of bonds for the required instalment of such loan shall have been executed and delivered. If after the expiration of twelve months from the date of the ratification hereof the work of construction shall not have been begun on the main line, this Agreement is to become null and void.

Of the proceeds realized from the sale of the bonds, after deducting so much of them as may be required to be kept in England for the purchase of materials and payments of contracts there, such amounts as may be estimated and certified to by the Engineer-in-Chief to the Board of Commissioners hereafter mentioned as being actually required for the construction of any particular section of the main line shall be ordered by the Board of Commissioners after consideration to be transferred to Shanghai to be kept in the Hongkong and Shanghai Bank, or such bank or banks as may be mutually agreed upon, and placed to the credit of the construction account of the Railway Administration for the exclusive purpose of building such section or sections of the railway herein provided for under the supervision of the Board of Commissioners.

On each occasion of a remittance being made to China the amount realized in sycee will be reported to the Director-General, and any portion which may not be required shall be placed at interest. Similarly the balance in England shall be placed at interest.

The accounts of the money spent from time to time in England, and of the money transferred to the credit of the construction and other accounts for use in China, are to be submitted quarterly to the Board of Commissioners for examination and for report to the Director-General for the information of the Wai-Wu-Pu and for his further report to the Board of Revenue and the Bureau of Mines for record therein, after such accounts have been approved and signed by him.

Article 5.—The dates of the bonds mentioned in Article 1, and of the certificates mentioned in Article 12 of this Agreement, shall be of even date with this Agreement. Interest shall begin to run upon the bonds only from the date of their respective sales and deliveries to the public, and due adjustment of such interest will then be made with respective purchasers for any fractional period of time thereafter covered by the coupon next maturing. For the purpose of such adjustment the then current interest may be reckoned from the nearest first or fifteenth day of the month in which the sale and delivery occur as the case may be.

Coupons which have theretofore matured are to be cancelled and delivered to the Chinese Minister in London for trasmission to the Railway Administration.

As to the form of bond, it is to be agreed upon by the Director-General or by the Chinese Minister in London and the British and Chinese Corporation at the same time as this Agreement is signed, but if hereafter the money markets in London or other countries require the modification of the form of the bond, except in anything that affects the amount of the loan, the rate of interest, the period of the loan, and the liability of the Chinese Government, which are not to be touched at all, such slight modifications may be made to meet the views of the money markets by the Corporation in consultation with the Chinese Minister in London.

Any modifications are to be reported at once by the Corporation to the Director-General for the approval of the Wai-Wu-Pu.

The bonds and the net profit certificates referred to in Article 12 are to be engraved entirely in the English language, and shall bear the fac-simile of the signature of the Director-General and of his seal of office, in order to dispense with the necessity of signing them all in person. But the Chinese Minister in London is to sign each of the bonds and certificates and put his seal thereon as required, as a proof that the issue and sale of these bonds as well as the certificates are duly authorized and binding upon the Chinese Government.

Such bonds or net profit certificates are to be numbered consecutively, and as many bonds or certificates as may be needed are to be properly engraved under the supervision of the Corporation.

The loan bonds herein referred to, as soon as they are engraved and signed and sealed by the Chinese Minister in London as hereinbefore provided, are to be countersigned by the Corporation.

The Chinese Minister in London and the Corporation are to agree upon the selection of a proper safe deposit in London to keep these bonds, subject to the needs and requirements of the Corporation, so as to enable it during the progress of the construction to sell these bonds after having been signed and sealed by the Chinese Minister in London in separate lots from time to time, or hypothecate the same in order to raise money to pay for the construction of the railway or any of the branch lines as may have been approved by the Director-General.

When the second and subsequent issues are about to be made, if the Corporation receives sufficient notice from the Director-General that subjects of China wish to take up a portion of the issue, the necessary amount of bonds will be set aside for Chinese subscribers, to whom the bonds will be sold at the same price and on the same conditions as those sold to the public in London. If possible, arrangements will be made for issuing these bonds, and paying the interest thereon, in China, at the current rate of the day.

The amount of the loan is fixed at £3,250,000 for the purpose of constructing and equipping the main line of the Shanghai-Nanking Railway, in accordance with the survey and estimates of the Engineer-in-Chief as approved by the Director-General.

The first issue of bonds shall be made in London in such amount as may seem necessary for the work to be undertaken, but before the second or subsequent issues are made the Corporation shall give sufficient notice to the Chinese Minister in London, in order that if the Chinese Government has funds at its disposal at the time it may place such funds to the credit of the construction account of the Chinese Railway Administration, to be used in the same manner as the proceeds of the loan, and in that event the total amount of the loan of £3,250,000 shall be reduced by the amount thus supplied by the Chinese Government.

It is also agreed that the moderate charge for the safe deposit of the bonds is to be paid from the general accounts of the railway. Beyond this all expense for the engraving and the sale of the bonds and such like are to be borne by the Corporation. On withdrawal or deliveries of bonds the Safe Deposit Company shall notify the Chinese Minister in London.

Article 6.—When the work of construction is ready to begin the Director-General shall appoint a Board for surveying the construction and operation of the railway, to be called the Board of Commissioners, whose head office shall be at Shanghai. The members thereof shall be five, of whom two are to be Chinese,—one to be appointed by the Director-General and one by the Director-General in consultation with the High Authorities of the province through which the line passes; and besides the Engineer-in-Chief there shall be two British members selected and appointed by the Corporation. The salaries of these five members are to be fixed by the Director-General and the Corporation, and to be paid from the general accounts of the railway. The regulations for the guidance of the Board of Commissioners shall be subsequently drawn up by the Director-General in consultation with the Agent of the British and Chinese Corporation. In case of disagreement between the Chinese and British members the matter shall be referred to the Director-General and the Agent of the Corporation resident in China for adjustment in an amicable way.

The appointments and functions of all the employees of the railway, Chinese and foreigners, with the exception of the Engineer-in-Chief, who shall be nominated by the Corporation and approved by the Director-General, as well as their salaries, including those of the officials of high rank referred to in the following paragraphs, are to be made and fixed by the Board of Commissioners and reported to the Director-General. In the case of important appointments the same shall be first reported to the Director-General by the Chinese members of the Board.

In addition to the Board of Commissioners, the Viceroy (the Superintendent of Southern Trade) may also appoint an official of equal rank with the above-mentioned two Chinese officials, whose duty will be to make report for the information of the High Provincial Authorities on the state of the railway accounts, the progress of the work, and the management of the railway. To this end he will be granted every facility by the Board of Commissioners, who will always give him access to the records of the head office at Shanghai. But this official shall not in any way interfere with the Board in the performance of its duties. The salary of this officer shall be the same as that of the two Chinese members of the Board, and be paid out of the railway account.

The functions of the Engineer-in-Chief, who will at all times give courteous consideration to the wishes of the High Provincial Authorities and the Director-General, shall be limited to the construction and operation of the line and the management of affairs connected with the railway. No foreigners employed in the railway shall be allowed to treat Chinese officials with disrespect, or interfere in local affairs, or usurp the authority of local officials; and should any such be guilty of riotous conduct, or of wounding and maiming Chinese, the same shall be dismissed on complaint being made by the Director-General.

As the progress of construction reaches any particular province the appointment, under the Imperial sanction, of a Chinese official of high rank shall be made in such province by the Director-General, for facilitating the settlement of any local matter with the Provincial Government concerned.

For the service of the railway any Chinese of official rank and competent for the work may be recommended by the Board of Commissioners to the Director-General for employment, under the formality of a letter of appointment.

For the important offices of the railway foreigners of ability and experience shall be employed. In the engineering and traffic departments competent Chinese may also be employed, and all employees, whether Chinese or foreigners, if incompetent in their work or unsatisfactory in their behaviour, may be dismissed at any time by the Board of Commissioners, and the dismissal shall be reported to the Director-General. The Chinese and British members of the Board when ill or absent may be represented at the Board by available substitutes. In the case of the Chinese members the substitutes must be approved by the Director-General, and in case of the British members by the Corporation.

When deemed necessary a school for the education of Chinese in the construction and working of railways shall be undertaken by the Board of Commissioners, subject to report to and approval by the Director-General.

The accounts of the receipts and disbursements of the railway are to be kept by a Chief Accountant, whose records and books are at all times open to the inspection and examination of the Board of Commissioners. All the accounts of the railway construction and operation are to be kept in Shanghai currency in the English and Chinese languages, with the combined signature of a Chinese and British official. The staff of the Chief Accountant's department shall be composed of Chinese and foreigners, who must be satisfactory and reliable men.

Article 7.—Under the provisions of Article 3 of this Agreement the properties covered by the first mortgage security hereby created include the railways, its property and equipment, said mortgage to be executed by a deed in the usual form as contemplated by the said Article. But subject to the guarantee and mortgage thus given by the Chinese Government, it is hereby declared that this railway is in fact a Chinese property.

All the lands that may be required for a double line of railway from Shanghai to Nanking, and for the double track-sidings, stations, repairing shops, and car-sheds to be provided for in accordance with the detailed plans now made or hereafter to be made by the Engineer-in-Chief, and approved by the Director-General, shall be acquired by the Railway Administration, whether in whole or in part, according to the means at its disposal at the actual cost price of the land. The cost of such land is not to exceed £150,000.

The titles to the land for the line and of all other lands shall be free from all encumbrances or entanglements, and shall from time to time as soon as secured be registered in the name of the railway.

For such money as may be provided by the Railway Administration for the purchase of land there shall be allowed yearly interest at the rate of 6 per cent., to be paid by the railway after the fixed charges and maintenance and interest of 5 per cent. on the bonds shall have been met.

Notices of such purchase (together with corresponding title-deeds) are to be transmitted by the Railway Administration under the direction of the Director-General to the local agent of the Corporation for record and preservation in its office in Shanghai, and for the purpose of establishing the first mortgage security (and thereafter for the return to the Railway Administration) as hereinafter in this Article provided in respect of railway lands and properties. When the term of this Agreement expires all the title-deeds shall be surrendered and returned to the Railway Administration.

The amount to be advanced to the Chinese Railway Administration for any land within the survey limits shall altogether not exceed the sum of £150,000, for which yearly interest at the rate of 6 per cent. shall be allowed from the receipts of the railway. It is understood that any land bought by the Chinese Railway Administration with their own money outside of the survey limits, but needed for future requirements, shall be on the Chinese Administration's own account, and no interest shall be allowed on the price thereof.

It is further agreed that if the British and Chinese Corporation is called upon to provide means for the acquisition of the lands, whether by the sale of bonds or by advances from other sources, the Chinese Government guarantees to procure and protect all the lands that are required for the line of railway.

All lands the title-deeds of which are lodged with the Corporation as part of the first mortgage security of the loan shall not be disposed of in any way by hire, lease, or sale to any party for any purpose whatever without the written consent of the Chinese Administration.

It is also agreed that the lands thus bought, whether from Chinese or British advances, shall be free from all entanglements arising from the removal of graves or from prejudices of "fengshui," and shall be conveyed by full and sufficient deeds of assignment according to Chinese law, all of which are to be kept and recorded in the Shanghai office of the British and Chinese Corporation, and to be held by it as a first mortgage security for the bonds under the provisions of this Agreement until such time as principal and interest of the bonds, together with all indebtedness, shall have been paid off, when the same shall then be returned to the Chinese Railway Administration.

For the proper protection of the first mortgage security the Chinese Government undertakes that until the bonds shall have been redeemed, and the net profits on the net profit certificates shall have been paid, no part of the lands comprised in the mortgage security or the railway with its appurtenances shall be

transferred or given to another party, or shall be injured, or that the rights of the first mortgage shall be in any way impaired.

It is likewise agreed that until the interest and principal of the loan and all indebtedness shall have been paid off, or unless with the express consent in writing of the Corporation, the Chinese Government or the Chinese Railway Administration shall not again mortgage the above properties to another party, whether Chinese or foreign.

During the period of this agreement no special taxes shall be levied by the Chinese Government on the railway, its appurtenances or earnings, but all taxes at present payable, such as land tax, as well as any taxes which the Chinese Government may hereafter institute, such as stamp duty, etc., and which may be applicable generally to all commercial transactions in China, shall also apply in the case of the railway and its operations.

The first expense in railway construction being the purchase of land, it is agreed that as soon as the survey is made the Corporation shall advance to the Railway Administration sums as required to pay for the land purchased. For such advances the Woosung Railway, with all its property, shall be given as first mortgage security, and interest at the rate of 6 per cent. per annum shall be allowed until the first portion of the loan has been floated, when such advances shall be repaid from the first proceeds of the loan.

As owing to the unwillingness of owners to sever their land it may become necessary for the Railway Administration to acquire more land than is actually necessary for railway purposes, the Railway Administration may do so in view of future requirements, but it is understood that any land bought from funds so advanced, out of the survey limits, shall be on the Chinese Administration's own account. When the purchase of all the land is completed, and the total amount thus expended is ascertained, an additional issue of bonds for an amount not exceeding £250,000, including the £150,000 referred to in this Article, shall be made in order to repay the sums spent in the purchase of land.

Such bonds shall be similar to the bonds mentioned in Article 1 of this Agreement, and shall have the same guarantee and same mortgage security and same treatment, with, however, this difference, that they shall be redeemable at par at any time on giving six months' notice, and that the rate of interest shall be 6 per cent. per annum. The interest on such portions of this loan as is applied to the purchase of land outside of the Engineer-in-Chief's survey shall in the first place be paid out of the Chinese share of the net profits of the railway, and failing this then out of the earnings of the railway.

As the object which the Railway Administration has in view is that all railway lands should be Chinese property, the additional loan of £250,000 shall be paid off as soon as practicable. Nevertheless, although such bonds may be redeemed, the land occupied by the railway within the survey limits shall continue as mortgage security under the terms of this Agreement.

Article 8.—It is agreed that if the half-yearly interest of the bonds is not paid on any due date thereof, or if the principal of the loan remains unpaid at maturity of the same, the whole railway with all its appurtenances herein mortgaged to the British and Chinese Corporation for the bondholders shall be handed over to the Corporation to be dealt with by it according to law, in such manner as will ensure the proper protection of the interests of the bondholders. When the whole loan and the interest due thereon and all indebtedness shall have been paid off, the railway, with all its appurtenances, in good working condition shall revert to the possession and management of the Chinese, according to the provisions of this Agreement.

Article 9.—As remuneration for superintendence and services the Corporation shall receive 5 per cent. on the entire cost of all materials purchased for the railway.

It is agreed that all materials required for the railway shall be purchased in the open market at the lowest price obtainable, but it is understood that all such materials shall be of good and satisfactory quality. Invoice and inspector's certificates are to be submitted to the Chinese Administration.

With a view to encouraging Chinese industries Chinese materials are to be preferred, as also the products of the Han-yang Iron Works, provided price and quality are suitable.

No commission will be allowed to the Corporation on the purchase of materials except as herein provided. All trade discounts or rebates, if any, are to go to the construction account.

Article 10.—In the construction of the line, in the working of the railway, and in the performance of the different kinds of business connected with the railway, no interference or obstruction by Chinese or foreigners will be permitted. The Chinese Government will provide protection for the line while in construction or when in operation, and all the properties of the railway, the combined enterprise of the Chinese Administration and British and Chinese Corporation, as well as all foreigners and Chinese employed therein, are to enjoy the utmost protection from the local officials, civil and military, in the provinces through which the railway passes, particularly on occasions of local disturbance or of obstruction by natives.

The Board of Commissioners are authorized to maintain a railway police of Chinese with Chinese officers for the protection of the line. Their wages and maintenance are to be wholly defrayed by the railway. In the event of the railway requiring further protection by the military forces of the Imperial or Provincial Government the same will be duly applied for by the Director-General and promptly afforded, it being understood that such military forces, although transported free by the railway, are to be maintained at the expense of the Government or the Province, as the case may be.

The railway police may not interfere with matters outside the railway.

Article 11.—In connection with the railway there shall be established and maintained a proper signalling service, which shall include such telephone and telegraph conveniences as may be found necessary to use along the line of the railway and its branches for the exclusive purpose of regulating the movement of trains and other incidental business of the railway, and such telephones and telegraphs shall not be used in or interfere with the rights and privileges of the Telegraph Administration.

It is further agreed that the Corporation may, in consultation with the Director-General, also establish and maintain in connection with such railway or its branches such other necessary adjuncts of modern railway operation as it may find expedient for the support of the railway, such as repair and manufacturing shops, docks, steamers, ferries, storage warehouses, etc.

Article 12.—It is agreed that after deducting from the income of the railways the working and other expenses as described below, the Corporation shall receive 20 per cent. of the net profits, to be represented by and in form of certificates to an amount equal to one-fifth of the cost of the line. These certificates carrying no interest, they are to have a term of fifty years and a declared face value of £100 each, and are to be issued to the Corporation at the same time as the loan bonds, and in amount proportionate to the respective series of such bonds to the amount of one-fifth of the aggregate thereof. And it is understood that if there is an issue of the loan bonds in excess of the requirements of the railway, and such excess is retired or cancelled, a like proportion of these certificates shall likewise be subject to retirement.

Before the expiration of the term of fifty years the Chinese Administration shall have the right at any time to redeem these certificates at their face value. After the expiration of fifty years the certificates shall be null and void and need not be redeemed, but if any net profits shall have accrued on such certificates prior to their redemption or maturity, said accrued net profits must be paid before the same are cancelled.

The Chinese Railway Administration is entitled to issue and receive like net profit certificates (to be in form appropriate for use in China and unlimited in their term, as also without redemption features) to an amount equal to the remaining four-fifths of the loan. These Chinese certificates may be issued in whole or in part whenever desired by the Director-General, but the net profits will be retained and used by the Railway Administration for the purpose of accumulating a fund to be derived from such share of net profits as may accrue thereon wherewith to pay off any loan bonds which may from time to time be redeemed under the provisions of this Agreement, or for generally reducing or ultimately discharging railway loan obligations whenever or wherever desirable by means of the profits of the railway. But such Chinese certificates may, however, be used in part by the Railway Administration if necessary in payment of lands which are essential to the railway, and which cannot otherwise be conveniently acquired by it.

The yearly income of the railway shall be subject to a deduction of all working expenses, cost of maintaining and repairing the railway, renovating or replenishment of engines and rolling-stock, and all expenditure connected with the business of the railway, and subject to the payment of interest on the bonds at 5 per cent. per annum (and of interest of 6 per cent. per annum on the cost of the land provided by the Chinese Administration, or provided by an advance from the British and Chinese Corporation), whatever is left of the gross income is considered to be net profits, of which one-fifth is to be given to the Corporation for disposal as it may see fit. If the loan bonds shall have been all redeemed according to the provisions of this Agreement before the net profit certificates issued to the Corporation have been redeemed, or shall have lapsed by effluxion of time, the Corporation shall be permitted to have a representative in the railway office (whose salary is to be paid by the Railway Administration) to inspect the accounts of the railway.

The duties of this officer are those of an Accountant who is to protect the interests of the foreign holders of net profit certificates until such time as these certificates shall have all been redeemed or lapsed by effluxion of time, when the services of such Accountant shall be dispensed with.

Article 13.—The British and Chinese Corporation are hereby appointed trustees for the bondholders and holders of net profit certificates, and in any future negotiations respecting these loans or matters arising in connection therewith, which may take place between the Railway Administration and the Corporation, the latter Corporation shall be taken as representing the bondholders and holders of net profit certificates, and as empowered to act on their behalf.

Article 14.—All materials of any kind that are required for the construction of the main line or branch lines, whether imported from abroad or from the provinces to the scene of the work, shall (following the precedent of the Northern Railway) be exempted from Customs duty and likin. The bonds of this loan together with their coupons, the net profit certificates and the income of the railway, shall be free from imposts of any kind by the Government of China.

As to the likin for goods or passengers which may be transported over the lines from, to, or through the different provinces, the Director General will confer with the Government Bureau of Mines and Railways and the Board of Revenue with a view to devising means to protect the traffic of the railway, and those who may use the railway for the transport of their goods, from illegal impositions and other abuses.

If the arrangements for the levy of likin over other railway lines is found to be more advantageous than that of the railways mentioned in this Agreement, the same advantages shall be extended to and enjoyed by the Shanghai-Nanking Railway, and by those who make use of the same.

Article 15.—It is agreed that during the time of the construction of the line the yearly 5 per cent. interest on the bonds and 6 per cent. interest on the amount spent in the purchase of the land are to be paid from the proceeds of the loan. The accruing interest from any

proceeds of the loan not used during the period of construction, and the earnings from the working of any sections as they are built, are to be used to make up the amount required for the payment of the said interest, and if any deficiency remains it is to be met from the proceeds of the loan.

When the construction of the line is wholly completed the interest on the bonds and on moneys spent in purchasing the land are to be paid from the earnings of the line every half-year on the first day of June and first day of December.

It is hereby agreed that the amount required for the payment of interest and repayment of principal, together with a sum of one-quarter of 1 per cent. on such amounts to cover commission to the Hongkong and Shanghai Banking Corporation, who are hereby appointed agents for the service of repaying the loan, shall be paid to them in Shanghai fourteen days before the due dates, in Shanghai sycee sufficient to meet such payments in sterling in London, exchange for which shall be settled with the Hongkong and Shanghai Banking Corporation on the said date of payment at the rate fixed at the time of settlement.

The Chinese Government undertakes and hereby promises to pay the principal of the loans and the interest on the loans on the due dates fixed therefor. If at any time the earnings of the railway and proceeds of the loan are not sufficient to pay the interest of the bonds, the Railway Administration is to devise means for supplying the deficiency; and should its inability to do so appear probable the Director-General will memorialize the Government to take measures to make up the deficiency from other sources, and thus be ready to pay off the indebtedness, so that the required amount may be placed in each case at least fourteen days previous to the due date of such interest in the hands of the Hongkong and Shanghai Banking Corporation in Shanghai.

Article 16.—In places along the line of railway where the Hongkong and Shanghai Banking Corporation has no agencies, and where it does not intend to establish any agencies, business relations are to be cultivated with the Chinese Imperial Bank and its local agencies, it being the intention of the British and Chinese Corporation to utilize the Imperial bank as much as practicable for facilitating the movement of funds.

Article 17.—The Corporation may, subject to all its obligations, transfer or delegate all or any of its rights, powers, and discretions to their successors or assigns, but the Corporation, which is a Corporation formed under English law, shall not transfer its rights under this Agreement or the management of the railway to other nations or people of any nationality except British or Chinese. Similarly the Railway Administration shall not transfer any of its rights under this Agreement to persons of other nationality.

It is further agreed that without the express consent in writing of the Director-General and the British and Chinese Corporation no other rival railway detrimental to the business of the same is to be permitted, and no parallel line to the Shanghai-Nanking Railway is to be allowed to the injury of the latter's interest within the area served by the Shanghai-Nanking main line or branch lines.

Article 18.—If on account of contingencies beyond the control of the Corporation, such as war or very great political changes in China or elsewhere, occurring before the publication of the prospectus of the issue of an important series of bonds of the loan hereby concerned, the foreign money markets are affected, or the construction of the railway is so obstructed that work cannot be carried on, the Corporation will be allowed a reasonable extension of time for floating such loan or the bond issues thereof, or for the commencement or completion of the construction of the railway. But if bonds have already been issued and interest already become payable thereon, then the work cannot be suspended or postponed unless subject to the exceptions mentioned in the preceding paragraphs.

When the Agreement has been ratified the work shall be begun as soon as possible, and if the Chinese Railway Administration desire, each section will be pushed on as rapidly as practicable. From the date of ratification a limit of five years shall be allowed for the completion of the whole line, subject to the preceding exceptions mentioned in this Article; and if this period is exceeded, unless with the consent of the Chinese Administration, the Corporation shall forfeit its one-fifth share of net profits already earned during the previous five years, and shall not begin to participate in such net profits until the line has been completed.

Article 19.—In the working of the railway the tariff for fares and freights is to be prepared by the General Traffic Manager, and submitted to the Board of Commissioners, who shall, after due consideration of existing tariffs of other railways in China, approve an economical rate.

The General Traffic Manager is likewise authorized to make arrangements, subject to the approval of the Board of Commissioners, with connecting railways of other companies for through rates of fare and freight.

In case of military operations, whether on account of foreign war or internal insurrection, the movement of troops, ammunition, and stores, by the Chinese Government, and in case of famine or other great calamity, the despatch of relief shall, on the requisition of the Director-General, have preference over the line at half of the tariff rates.

Nothing to the injury of China shall be allowed to be carried over the line, neither shall the line be used to the detriment of China.

Article 20.—In the Preliminary Agreement, dated 13 May, 1898 (23rd day of intercalary 3rd Month of the 24th Year of Kwang-Hsu), it is stipulated that the Railway Administration has the right to redeem the loan at 102½ after twelve and a half years, and at par after twenty-five years. It is now agreed that if at any time after the lapse of twelve and a half years from the date of the issue of the bonds the Chinese Railway Administration receives instructions from the Chinese Government to cancel any of the bonds or any of the net profit certificates, the Director-General shall, not less than six months previous to the proposed redemption, notify in writing the Agent of the Corporation in Shanghai declaring the number of bonds or the number of net profit certificates so required to be redeemed and cancelled.

The Agent of the Corporation shall immediately on the receipt of such notice in writing proceed to make arrangements for the desired redemption by drawing lots, and taking other proper steps in the way customary in London, of the number of bonds or net profit certificates in such quantity as may be required. And as soon as the Railway Administration, under instructions from the Chinese Government, shall remit the proper amount according to the redemption price of the bonds or the redemption price of the net profit certificates, together with the interest due on the bonds, or the net profits due on the certificates, a notice shall be published in two of the most prominent papers in London, and in such other financial centres as may be agreed upon with the Chinese Minister for four weeks. At the expiration of the four weeks, and on the day fixed for the redemption, the Corporation shall cause the usual lots to be drawn for the redemption of the bonds or certificates, and shall pay over the respective prices of the same to their respective holders, and shall thus redeem the bonds or net profit certificates and cancel them, and thereupon the same are to be delivered to the Director-General, or the Chinese Minister in London, for return to the Director-General.

All the loan bonds and the net profit certificates shall express that they are redeemable at any time on the conditions mentioned in the preceding paragraph, and shall state that the payment of any interests for the bonds, and of the participation of any of the net profits by the certificates so drawn by lot, entirely cease from the date mentioned by the published notice of the Corporation. The amount required for the redemption shall, however, have to be got ready and placed in the hands of the Hongkong and Shanghai Banking Corporation before such redemption is carried out.

The loan bonds, if redeemed before twenty-five years from the date they were originally issued, shall be paid for with a premium of 2½ per cent. over their face value (*i. e.* £102, 10*s.* will be required to pay £100), but after twenty-five years from the date of issue to the expiry of the term of the loan the bonds may be redeemed without payment of any premium. If any interest is still due on any of the bonds at the time of redemption, such interest shall have thereupon to be paid in full. As to the net profit certificates, if they are redeemed within the term of their duration they are to be paid for according to their face value, and such certificates run to the end of their term they become null and void and no price need be paid on them, nor need they be redeemed, but any net profits still due on them shall have to be fully paid up according to their amounts before the same are cancelled.

Article 21.—If any proceeds of the sale of bonds are lying unused and bearing interest on their deposit whilst the construction of the railway is going on, such interest is to go to the general account of the Chinese Railway Administration, in order that the Railway Administration may enjoy the full advantage thereof.

It is also agreed that if the Corporation shall find it necessary, before the sale of any of the bonds, to advance any money for the work, the expense of effecting such advances, together with the interest thereon, not exceeding a charge of 6 per cent per annum, shall be deducted from the interest derived from the above mentioned unused proceeds of the sale of the bonds, or otherwise to be provided for in the construction accounts. It is further agreed that the proceeds of the first sale of the bonds immediately following any such advance shall be used to pay off the said advances, so as to save the cost of the aforesaid charge.

Article 22.—If any of the bonds still remain unredeemed, when the fifty years of the term of the loan are about to expire, the Director-General will, within two years preceding the expiry of the said term, negotiate by writing with the Corporation for an extension of the term of the loan; and if six months shall have expired after such negotiations in writing and no definite arrangements shall have been come to, the Chinese Government shall be at liberty to take steps to devise means for procuring elsewhere funds to pay off the loan, and to redeem the bonds and cancel the mortgage.

Article 23.—The existing Woosung-Shanghai line (as soon as the price agreed upon is ready to be handed over to the Railway Administration) shall be taken over as part of the Shanghai-Nanking system, and the earnings and administration of this section shall be treated in like manner as the Shanghai-Nanking line. The price of the Shanghai-Woosung line shall be taken as Tls. 1,000,000, and this amount shall be paid to the Chinese Railway Administration out of the proceeds of the loan.

Article 24.—Immediately after the signature of this Agreement, and before the issue of any prospectus of the loan to the public, the Director-General shall memorialize the Throne and obtain an Imperial Edict confirming and sanctioning the provisions of this Agreement. The Imperial Edict so received shall then be officially communicated without delay to the British Minister in Peking by the Wai-Wu-Pu.

Article 25.—This Agreement is executed in quintuplicate in English and Chinese, one copy to be retained by the Railway Administration, one by the Wai-Wu-Pu, one by the Bureau of Railways and Mines at Peking, one by the British Minister in Peking, and one by the Corporation, and should any doubt arise as to the interpretation of the Agreement the English text shall be accepted as the standard.

Signed at Shanghai by the Contracting Parties this fifteenth day of the intercalary fifth month of the twenty-ninth year of the Emperor Kwang-Hsu, being the ninth day of July nineteen hundred and three of the Western Calendar.

AGREEMENT FOR THE CONSTRUCTION OF A RAILWAY FROM TAOKOW TO CHINGHUA, IN THE PROVINCE OF HONAN, MADE BETWEEN H. E. SHENG HSUAN-HUAI, DIRECTOR-GENERAL OF RAILWAYS, BEING THERETO SPECIALLY AUTHORIZED BY THE CHINESE GOVERNMENT, AND GEORGE JAMIESON, ESQ., C. M. G., AGENT-GENERAL OF THE PEKING SYNDICATE LIMITED, ALSO BEING FULLY AUTHORIZED BY THE SAID SYNDICATE.

1.—On the 21st May 1898 (Kwanghsu 24th year 4th Moon 2nd day) the Shansi Bureau of Trade signed an Agreement with the Pekin Syndicate for working coal and iron in the five following places, namely, Yu Hsien, Pingting Chow, Luanfu, Tsechowfu, and Pingyangfu in the province of Shansi, and on the 21st June 1898 (Kwanghsu 24th year 5th Moon 3rd day) the Yu-Feng Company signed a mining Agreement with said Syndicate for mining in Honan in the neighborhood of Huai Ching and north of the Yellow River. These Agreements were both ratified by the Tsungli Yamen, in pursuance of an Imperial Decree dated 17th May 1898 (Kwanghsu 24th year intercalary 3rd Moon 27th day). In Article 17 of said Agreements it was stated that the Pekin Syndicate, on notifying the Governor of the province, should be permitted to build a railway to connect the mines with a main line or with water navigation. In June 1902 the Pekin Syndicate began to open coal mines in Sui Wu Hsien of Honan province, and at the same time gave notice to the Governor and obtained permission to build a railway from the said mines to Taokow, a port on the Wei River.

The British Minister has now applied that the said railway be put under the General Administration of the Imperial Chinese Railway Company, and the matter having been arranged in consultation with the Wai Wu Pu, this Agreement has been discussed and settled between the Director-General of the said Imperial Chinese Railway Administration and the said Syndicate.

The line from Taokow to Tsechow is divided into two sections, the first from Taokow to the neighborhood of Chinghua Chen, a distance of 90¼ miles; the second section is from Chinghua Chen to the neighborhood of Tsechow in Shansi, a distance of 38 miles more or less.

The construction of the first section has been undertaken by the Pekin Syndicate, and is now approaching completion. The present Agreement deals specially with the first section from Taokow to Chinghua Chen. As regards the second section, it is agreed that hereafter, when the Pekin Syndicate has fixed a date for opening mines in the neighborhood of Tsechow, a supplementary Agreement will be drawn up between the Director-General and the Pekin Syndicate to provide funds for construction, etc., of this section on terms in conformity with those of the present Agreement for the Taokow to Chinghua line, and on the basis of the Russian Cheng-Tai Railway Agreement, said terms to be settled at their discretion.

The cost of construction of the line from Taokow to Chinghua Chen, including rolling-stock and monies expended by the Syndicate as estimated by the Chinese Engineer after verification of the proper accounts, is £614,600. But in order to provide a liberal sum to meet the expenses of working the line until it is fully developed, and the interest on the loan, the Director-General has fixed the amount of the loan at £700,000, in 7000 bonds of £100 each. This loan is to bear interest at 5 per cent. per annum, and to be called the Chinese Imperial Government Honan Railway 5 per cent. (gold) loan of 1905.

2.—Out of the above amount of £700,000 there will be issued to the Syndicate 6829 bonds of £100 each, which the Syndicate takes firm at the price of 90 per cent. of face value, equivalent to £614,600 cash, in order to refund the above amount of capital. This will be done on the day when the line is handed over to China, and interest on the bonds will accrue from date of issue.

At the same time the Syndicate will make up and present an account with vouchers of all initial expenditure not already included in construction account, and of the sums provided by them from time to time for the ordinary working of the line from the date of opening to traffic to the time of handing over, and request the General Administration to examine and settle it. Any loss on working account after deducting earnings will be borne half and half by each. To the amount so found due will be added interest on capital from January 1st, 1905, to the date of handing over, and the total of these two items will be refunded to the Syndicate by the former issue of bonds out of the 171 surplus bonds in hand for the required amount reckoned at 90 per cent. of face value. If any bonds still remain over, they will be retained by the Imperial Chinese Railway Administration for future use. If after the line is taken over the earnings of the line are insufficient to meet the payment for interest and refund of capital at due date, a further loan may be obtained from the Syndicate. These bonds shall be signed in the name of the Chinese Government by the Chinese Minister in London.

The interest coupons will be paid at their face value in gold in London on the 1st of July and 1st January of each year. Coupons falling due and paid will be collected in numerical order by the Syndicate at its cost and handed over to the Chinese Minister in London.

3.—The loan shall be redeemed in twenty years dating from the tenth year of issue by annual drawings, which shall be held in London at the office of the Pekin Syndicate, in conformity with the schedule hereto annexed.

The drawings will be held on the 2nd Tuesday of January of each year. The first of such drawings shall be held in the year 1916. The number of drawn bonds at each drawing will be published in four daily newspapers at the cost of the Syndicate.

4.—Drawn bonds shall be paid in gold at their face value at date when the next interest falls due. Bonds presented for payment must be surrendered along with all the interest coupons not yet due. In case of shortage the sum of the missing coupons shall be deducted from the capital repayable. Interest on the bonds will cease on the date when the latter are repayable. Repaid bonds will be collected by the Pekin Syndicate at its cost, and handed over to the Chinese Minister in London.

5.—The Chinese Government shall not be at liberty before the year 1916 to augment the amount of the annual instalments for redemption, nor to repay the whole amount of the loan, nor to convert the loan. After this date the Chinese Government shall be at liberty at any time to repay the whole amount of the loan, provided, however, that until the expiry of the Syndicate's mining concessions the rates then in force for the conveyance of minerals shall not be arbitrarily increased to the detriment of the Syndicate's business. On the other hand, the Syndicate, after having settled an equitable tariff with the General Administration, based on the practice on other lines, shall not make pretexts to lower the rates to the detriment of the fund available for payment of principal and interest.

6.—Interest coupons and drawn bonds shall be repayable in gold in London at the office of the Pekin Syndicate, or of such bank as the Syndicate may appoint for that purpose.

7.—Payment of interest and repayment of the bonds forming this loan are guaranteed upon the general revenue of the Chinese Government. Further, by consent of the Chinese Government, the Imperial Chinese Railway Administration hereby declares that the net earnings of the said section of railway, after payment of the ordinary working expenses, are specially reserved for payment of interest and repayment of the said bonds, as is set out in the Working Agreement made between the said Imperial Chinese Railway Administration and the Pekin Syndicate, and which working Agreement is to be taken as one with this Contract. This reserve is exclusively for the purposes above set forth, and is not divertible until the final extinction of the bonds of this loan.

8.—The Imperial Chinese Railway Administration, after having taken note of the net receipts, authorises the Pekin Syndicate to convert the amount into gold, which shall be done on the most favorable terms in the interest of the Chinese Government and the Imperial Chinese Railway Administration, in order to assure the service of the loan at the next half-yearly period of payment. The remittances to the head office of the Pekin Syndicate in London shall continue until the sum necessary for the whole service of the loan at the next half-yearly payment has been realised in gold, and so that the service of the loan is assured three months at least before the half-yearly payment falls due.

The bank in which such sums are deposited will allow the best interest obtainable, for the benefit of the Imperial Chinese Railway Administration. The account in which said sums stand will be debited twenty days in advance with all the payments falling due at any half-yearly period, as provided for in this Contract, whether for interest, repayment of capital, cost of transport or commission.

9.—In order to assure more fully the guarantee now given for the loan, the Imperial Chinese Railway Administration creates in favor of the bonds a first mortgage over the said section of railway line, its permanent way, rolling-stock, and earnings. This special hypothecation is made to and accepted by the Pekin Syndicate for the benefit of the bondholders.

In case the Imperial Chinese Railway Administration shall fail to carry out the engagements entered into by this Contract the Pekin Syndicate can exercise, in respect to the said railway and property, all the rights and powers which they are entitled to exercise resulting from this special hypothecation.

10.—The foregoing stipulations do not militate against the responsibility of the Chinese Government in regard to this loan as specified in Article 7. The Chinese Government will devise means to provide the amount in gold necessary to supply the deficiency in case the sums accruing from the net earnings of the said section of railway, and paid over by the Chinese Railway Administration, are insufficient, after conversion into gold, to provide at least three months ahead for the payment falling due at the next half-yearly period.

In such case the Chinese Government will on demand place at the disposal of the Pekin Syndicate, fourteen days in advance of the due date, either in gold or value in some other form sufficient to produce in gold, the sum which the Syndicate may have notified as being necessary to meet the service of the loan.

11.—From the monies thus received from the Imperial Chinese Railway Administration, or from the monies paid over by the Chinese Government, the Pekin Syndicate shall duly set aside beforehand the sums necessary for the next service of the loan on the basis of the requirements of the last preceding half-year.

12.—The Chinese Government will pay to the Pekin Syndicate, or to the bank charged with the service of the loan, a commission of one-fourth of 1 per cent. on the amount of interest coupons paid,—that is, £25 on each £10,000, and the like commission on all bonds drawn for payments or repaid in anticipation of the due date. The amount of this commission will be taken from surplus earnings of the railway, if there are any, and in case these are insufficient it will then be paid by the Chinese Government.

13.—The Chinese Government binds itself to respect and cause to be respected the privileges attaching to the bonds as stipulated for in the present convention, and to maintain the bonds themselves, the interest coupons and operations incident to the service of the loan, free from every tax and impost of whatsoever nature.

14.—Coupons not presented for payment within five years from the date when they fall due will be forfeited for the benefit of the Chinese Government. In case of drawn bonds the term within which payment may be claimed is thirty years. In the case of a deceased bondholder the right will pass to his heirs, executors, etc., in conformity with the law of his own nationality.

Payment of the coupons and repayment of bonds will be made whether in time of war or peace, and irrespective of whether the holder belongs to a hostile or friendly State.

If bonds are lost, stolen, or destroyed the Chinese Government, upon satisfactory proof of the facts of the loss and the title of the

claimant, will authorise the Pekin Syndicate to issue fresh bonds to replace those lost, at the expense of the Syndicate.

15.—The Chinese Government, through its Representative in London, will take the necessary steps and furnish the necessary documents so as to enable the bonds to be officially quoted on the London Stock Exchange.

16.—The price of all land taken up for the railway having been included in the loan, the Syndicate will in the first place hand over the title-deeds to the Imperial Chinese Railway Administration, so that a list may be made which, after being stamped by the Magistrates of the several districts concerned, will be retained for record. The Railway Administration will then return the deeds to the Syndicate for custody, having first impressed on each a stamp indicating that they are not to be sold, pledged, or mortgaged. When the term has expired, or when the loan is fully repaid, the Syndicate will thereupon hand over to the Railway Administration all the original title-deeds, to be held by them as owners of the property. During the continuance of the term the Syndicate shall not assign the deeds to others, whether by way of sale, mortgage, or pledge.

17.—This Agreement and the rights under it being made with the Pekin Syndicate, which is of British nationality, the said Syndicate, besides conforming as hereby required with the several articles of the Agreement, shall not either openly or secretly alienate the said rights to persons of another nationality and shall not substitute persons of another nationality in the management of the railway affairs. A breach of this stipulation will entitle the Imperial Chinese Railway Administration to take the management out of the hands of the Syndicate, and entrust it to another company, and in that case the Syndicate shall have no claim for compensation.

The foregoing places no restriction on the holding of shares in the Pekin Syndicate by persons of another nationality, nor on the holding of bonds of this loan, both of which may be freely bought and sold on the market at the convenience of the holders.

18.—In the accounts of this section there has been included an item for preliminary survey expenses, as also the cost of partial surveys of the second section which have already been made by the Syndicate, the result of which will be submitted to the Director-General.

19.—All plant and materials necessary for the repair and working of the line will be purchased by the Syndicate as agents, but in placing such order the Syndicate will do their best to get the most favorable terms. A list of articles required shall be submitted to the Director-General for approval before the order is given.

It is understood that articles which China herself can manufacture, if quality and price are the same, are not to be ordered from abroad. The workshops and mines controlled by the Director-General Sheng ought more especially to have the preference in supply of such articles, provided that in quality and price the articles are equivalent to what can be imported from abroad. By price is meant the cost in the foreign country plus freight and insurance. All materials imported from abroad shall be exempt from customs duty, and from likin in transit to the interior.

20.—In case of difference of opinion arising between the Pekin Syndicate and the Chinese Government, or the Imperial Chinese Railway Administration, the matter in dispute shall be discussed and settled between a member of the Wai Wu Pu and the British Minister. If these cannot agree the Wai Wu Pu and the British Minister will appoint an Arbitrator, whose decision will be final.

21.—This Agreement is executed in duplicate, one copy to be kept by the Imperial Chinese Railway Administration and the other by the Peking Syndicate. In case of doubt or ambiguity of meaning between the two texts, the English version shall be deemed the standard. This contract shall be submitted to the Throne by the proper authority, who will request ratification. After ratification the Wai Wu Pu will officially communicate the fact to the British Minister at Peking for record, and so that the Syndicate may conform to the articles hereby agreed upon.

All the above must be done within one month from date of signature.

Signed and sealed at Peking the 3rd July, 1905.

Signature and Seal of
SHENG HSUAN-HUAI,
Director-General of Railways.

(Signed) G. JAMIESON,
Agent-General, Pekin Syndicate Ltd.

WORKING AGREEMENT MADE BETWEEN HIS EXCELLENCY SHENG, DIRECTOR-GENERAL OF RAILWAYS, BEING THERETO SPECIALLY AUTHORIZED BY THE CHINESE GOVERNMENT, AND G. JAMIESON, C. M. G., AGENT-GENERAL OF THE PEKIN SYNDICATE LIMITED.

1.—The Imperial Chinese Railway Administration, under the authority of the Imperial Government, authorises the Pekin Syndicate, which will appoint a General Manager for the purpose, to manage, administer, and work the Taokow-Chinghua section of railway for profit on behalf of the said Railway Administration. Notice of the appointment of the General Manager shall be communicated beforehand to the Director-General for his information and confirmation.

2.—As soon as this section of the line is completed, the Pekin Syndicate will report to the Director-General, and after being definitely taken over by him, the Pekin Syndicate will take charge of it for working. The section is to be completely provided beforehand with all the rolling-stock necessary for working, as also with a supply of tools, furniture, and funds for working expenses. The Pekin Syndicate or its delegate, in conformity with the stipulation in Article 1, will organize the service. It will have authority to engage or dismiss officials and servants, and as to their salaries a scale thereof will be drawn up beforehand for submission to the Director-General, and subsequent alterations will also be submitted for his approval. The Syndicate shall also purchase all articles necessary for the maintenance and repair of the line, shall fix rates for goods and passengers in accordance with the railway regulations on other lines, shall receive all the earnings and pay all the working expenses and the expenses of the Imperial Chinese Railway Administration relative to this railway. All the above working details must be submitted beforehand by the Pekin Syndicate or its delegate to the Director-General of Railways and settled in consultation.

The General Administration shall have the fullest power to examine the details of income and expenditure, and to appoint a Representative, a Cashier, Accountant, and an Interpreter, who will be associated with the European staff, in order to exercise the above-mentioned power of examination. The salaries of the Representative and his associates above-mentioned will be paid from the office of the Tsechow-Taokow Railway.

The Representative shall countersign all vouchers for payment. Accounts will be rendered monthly to the General Administration in English and Chinese, one copy each, and signed by the respective English and Chinese officials.

The General Administration reserves the right to cause the dismissal of any employee, whatever his nationality, including the General Manager, who does not perform his work satisfactorily or is guilty of misconduct, insubordination, or disrespect towards the Chinese authorities, and this should be mentioned in the contracts at the time of engagement of the employee.

All Chinese Employees, whether for repairs of line or otherwise, will be selected by the Representative of the Director-General, who will place them under the executive orders of the General Manager. No Chinese officials or servants can be engaged without the sanction of the Director-General. The expenses of the Shanghai Imperial Railway Administration in respect to this line shall be paid in the same way as for the Luhan Railway. After this section is finished and the working has begun, if additional rolling-stock or plant is required, or if improvement or extensions of the line or stations become necessary, the funds for the same shall be provided by the office of the Tsechow Railway. As regards contracts for the supply of materials necessary for maintaining and repairing the line, means should be devised to place the same at Chinese workshops. It is understood that the mines and workshops controlled by H. E. Sheng shall have the preference on the conditions and at the price at which the articles could be purchased abroad. By price is meant laying down cost in China.

3.—In the event of military operations, whether due to foreign war or internal disturbances, the railway will give the preference to Chinese Government troops, stores, or munitions of war over private merchandise in conveyance over the line.

Rates to be charged in such cases shall be one-half of the ordinary rates, and in such matters the railway will carry out any special instructions given by the Director-General. Articles tending to the injury of the Chinese Government are not to be carried on the line.

In case of famine, stores for relief will be carried at half rates.

Special arrangements will be made in consultation with the Representatives of the Director-General for conveyance of local authorities or members of the Imperial Government travelling on important business over the line. Free passes over the railway shall be countersigned by the Representative of the Director-General.

4.—From the net earnings of the line after paying all working expenses the Pekin Syndicate shall retain such sums as are necessary to meet the service of the loan at least three months in advance of the next half-yearly payment. This procedure will be followed until the whole loan is finally redeemed. The sums retained will be paid over monthly to the Pekin Syndicate, or to the bank appointed for that purpose by the Syndicate. The latter will convert the sums so received into gold at best rate obtainable, in order to be used for the service of the loan. Information as to this will be given from time to time to the Director General.

When by means of monies thus paid over the service of the loan is assured, the Syndicate will set apart 10 per cent. of the surplus, which will be devoted to building up a reserve fund in order to meet the cost of ordinary or extraordinary repairs with a view to assure the working of the line. The surplus of net earnings still remaining will be paid over to the Imperial Chinese Railway Administration. When the loan is all repaid, in accordance with the next following article, the Syndicate or its Representative will hand over to the Representative of the Director-General all the line, fixtures, rolling-stock, and appurtenances, the whole in good working condition.

5.—The duration of the present contract is fixed at thirty years from date of signature. If, however, on the expiry of that date the loan is not fully paid off, the term of the contract will be necessarily extended, and it will continue until the whole loan is finally redeemed. But if the loan is finally redeemed before the due date, the present working contract shall become null and void from the date of such redemption.

6.—The Pekin Syndicate, during the term of this contract for the working of the line, shall be entitled to receive from the Imperial Chinese Railway Administration, on making up the yearly accounts, 20 per cent. of the surplus profits of each year. By surplus profits is meant what is left over after providing for payment of interest and redemption of capital.

7.—In case of dispute the matter is to be settled as provided for in Article 20 of the principal contract.

8.—If the earnings are insufficient to meet working expenses, the Imperial Chinese Railway Administration will provide funds so as to enable the regular working of the line to be kept up. The funds thus supplied will be considered as a temporary advance merely, and to be paid as soon as the income exceeds expenditure.

9.—All materials and supplies which the Syndicate may require for the working, main-

tenance and repair of the line shall, if imported from abroad, be exempt from Customs duty and likin.

10.—The present contract is drawn up in two copies, one for the Imperial Chinese Railway Administration and the other for the Syndicate.

In case of doubt or difference in interpretation of the contract the English version shall be deemed the standard.

This Contract shall be submitted to the Throne for ratification by the proper authorities, and when the Imperial sanction has been obtained, it will be communicated by the Wai Wu Pu in an official despatch to the British Minister. Signed and sealed at Peking the 3rd July 1905.

Signature and Seal of
SHENG HSUAN-HUAI,
Director-General of Railways.
(Signed) G. JAMIESON,
Agent-General, Pekin Syndicate Ltd.

LOAN AGREEMENT FOR £1,100,000 FOR RECOVERY OF THE CANTON-HANKOW R. R. CONTRACTS (TRANSLATED FROM THE CHINESE.)

(Date of signing not given in the agreement. Becomes effective October 6, 1905.)

This Agreement, made between the Junior Guardian of the Heir Apparent Viceroy of the Hu-Kuang, Chang Kung Pao, of the Empire of China, and the Hongkong Government of Great Britain:

Whereas: Chang Kung-Pao has received a special decree directing him to arrange to take back the Canton-Hankow Railroad, and whereas the loan (hereinafter described) has been consented to by His Majesty the Emperor of China, and is to be made on behalf of the present and the succeeding Viceroys or Governors of Hupeh, Hunan, and Kuang-tung; and

Whereas: All the affairs pertaining to or concerning the Canton-Hankow Railroad are under the management of Chang Kung-Pao who is now in need of money to pay the American Company for the redemption of the right of constructing the railroad; and whereas Chang Kung-Pao after conference with the British Government has requested the same to loan him the money necessary to pay the American Company in order to purchase back the outstanding shares in fulfillment of the charge committed to him; and whereas the British Government has instructed the Governor-General of Hongkong to promise the loan, as requested, for the purpose mentioned; therefore the following agreement is now made:

1. The Hongkong Government agrees to loan to the three provinces of Hupeh, Hunan and Kuang-tung the sum of One Million and One hundred thousand pounds, £1,100,000, and to hand over the said amount on the conditions hereinafter stated in paragraph No. 7. As to the amount of this debt for which each of the above mentioned provinces shall be responsible, it shall be definitely settled and upon a decision being reached, the amount for each province shall be declared.

2. This loan is made for a period of ten years, commencing on the 8th day of the 9th moon of the 31st year of Kuang-Su (October 6th, 1905), and is to be refunded in ten yearly installments, i.e. £110,000 per year, the end of the first year i.e. the 19th day of the 8th moon of the year 1906 being the day for the payment of the first installment. After the payment of the fifth installment, if the said three provinces are willing to complete the payment of the remainder of the loan in one payment, notice must be given six months prior to the proposed date of settlement. After the payment, of the loan and interest this agreement shall become void.

3. The interest on the sum included in this loan is to be £4½ per £100 per annum, payable semi-annually, being calculated on the amount of the said loan and yet refunded.

4. The amounts of the loan and the interest to be paid at each period and the dates of payment are to be reckoned in accordance with the list attached to this agreement, and are to be paid from time to time at the Treasurer's Office at Hongkong. Drafts in gold pounds will be received at their face value. If so desired by the Hongkong Government, payment of any installment shall be made in silver at the rate of the day. The opium tax of Hupeh, Hunan and Kuangtung is made a bond and a security for the payment of the capital and interest of this loan, which shall constitute a first charge upon these revenues. During the period in which the whole or any part of this loan remains unpaid, the opium tax of the three above mentioned provinces shall not be made security for any other loans, and during the continuance of this loan should there be another agreement entered into mortgaging the opium taxes of Hupeh, Hunan and Kuang-tung, either singly or unitedly, it shall not be given precedence over this agreement nor made a joint charge with this loan upon said revenues. It must be plainly stated in any such agreement that the payments of principal or interest can be paid from these revenues only after this loan shall have been paid. Should the opium tax of these three provinces be insufficient to pay the loan, the Viceroy of Hu-Kuang shall confer with Hunan and Kuang-tung ascertaining in which province the tax is not sufficient to meet the provisions of this loan and in such a province or provinces additional appropriation shall be made from other taxes or likin toward the payment of this loan. If under such an arrangement the said provinces are still unable to pay back the installments of interest and capital at the due dates, then the British Government may ask the Viceroy of Hu-Kuang to confer with Hunan and Kuang-tung ascertaining which province is unable to meet its part and shall set aside other reliable taxes or likin, to be administered by the Imperial Maritime Customs, as security for this loan.

6. It is further agreed that bonds in gold pounds guaranteed by likin shall be deposited and retained in the British Consulate General at Hankow as security for this loan, and the total value of these bonds in taels shall be equivalent to the total sum of the capital and interest of this loan. These papers shall be sealed with the seal of the Viceroy of Hu-kuang and signed by the Hankow Commissioner of Customs. If the interest and capital of this loan should not be paid into the Treasury at Hongkong at the times herein specified, these likin bonds may be used in the provinces of Hupeh, Hunan and Kuang-tung in payment of likin, and any officials of these three provinces who are at all concerned by this agreement shall be notified to act in accordance with these stipulations.

7. It is agreed that the Hongkong Government is to remit £400,000 on the sixth day of October, 1905, to the Hongkong and Shanghai Banking Corporation at Hankow to be handed to Chang Kung-Pao, who will receive the same, and the sum of £700,000 will be forwarded to New York and there to be handed over to the Chinese Minister Liang in America. The Hongkong Government may from time to time call upon the British Consul General at Hankow to request from Chang Kung-Pao such evidence as may seem fit to prove that the money loaned is being actually used for the above purposes, i. e. the purchasing of the Canton-Hankow Railroad Concession.

8. This agreement, previous to its signature, has been submitted in a Memorial to the Throne, and an Imperial Edict has been issued approving the same and the Wai Wu Pu shall at once send a dispatch to the British Minister at Peking informing him of this agreement.

9. In this agreement the opium tax of Kuang-tung has been mentioned as a part of the security given for this loan. Chang Kung-Pao has conferred with the Viceroy of the Liang-Kuang by telegraph regarding this loan and the Viceroy of the Liang-Kuang has replied agreeing to have the opium tax of his province given as security, so that there can be no difference of opinion hereafter so far as the articles of this agreement affect the province of Kuang-tung.

10. Six copies of this agreement shall be made in Chinese and English, one to be kept in the yamen of the Viceroy of Hu-Kuang, one to be kept in the yamen of the Viceroy of Liang-Kuang, one to be kept in the Governor's yamen in Hunan, one to be forwarded to the Governor-General at Hongkong, one to be handed to the British Minister at Peking, Sir Ernest Satow, and one to be kept in the British Consulate General at Hankow. In the event of their being any difference of meaning between the Chinese and English texts, the English text shall be considered the correct one.

(Sgd.) E. H. FRASER,
British Consul General at Hankow.

(Sgd.) CHANG CHIH-TUNG,
Viceroy of Hu-Kuang Provinces.

AGREEMENT BETWEEN THE WAI-WU-PU (BOARD OF FOREIGN AFFAIRS OF THE CHINESE GOVERNMENT) AND THE BRITISH AND CHINESE CORPORATION LIMITED, FOR THE ISSUE AND REGULATION OF A LOAN FOR THE CONSTRUCTION OF A RAILWAY FROM THE CITY OF CANTON TO THE BOUNDARY OF THE KOWLOON LEASED TERRITORY UNDER BRITISH CONTROL (HEREINAFTER CALLED THE RAILWAY.)

This Agreement is made at Peking on the 23rd day of the first month of the 33rd year of Kwang Hsu, corresponding to the 7th day of March 1907, and the contracting parties are:—

The Wai-Wu-Pu acting under the authority of an Imperial Decree, of the one part, and the British and Chinese Corporation Limited (hereinafter called the Corporation), of the other part.

Whereas a preliminary agreement was made on the 28th March, 1899, between H. E. Sheng, Director-General of the Imperial Chinese Railway Administration, acting under the authority of the Tsung-Li Yamen, of the one part, and the British firm of Jardine, Matheson & Company, for themselves and on behalf of the Hongkong and Shanghai Banking Corporation, representing as Joint Agents the Corporation, of the other part, and it was part of the objects thereof that the terms of another preliminary agreement signed by the same contracting parties on the 13th May, 1898, should be thereby adopted as a preliminary agreement for the construction and working of a Railway from the city of Canton to the boundary of the Kowloon leased territory under British control, subject, however, as far as might be practicable, to the terms and conditions thereafter agreed to in the final contract for the Shanghai-Nanking Railway when signed and ratified.

Now it is hereby agreed by and between the parties hereto as follows:

Article 1.—The Corporation agrees to issue, on behalf of the Imperial Chinese Government, a sterling loan (hereinafter referred to as "the loan") for the amount of £1,500,000 on the terms and conditions hereinafter contained. Imperial Chinese Government bonds are to be issued for the entire amount, similar to the bonds of the Shanghai-Nanking Railway, with the Railway as first mortgage security therefor. The loan shall be in one issue and the price agreed upon is 94 per cent. of the nominal value, subject to the other provisions of this Article as hereinafter stated. The interest on the bonds shall be at the rate of 5 per cent. per annum on their nominal value, payable half-yearly, on the first day of June and the first day of December, and shall be calculated from the date of their sale to the public.

The loan shall be issued to the public as soon as possible after signing this Agreement, but, if at the date of signature thereof, owing to an unfavorable state of the market rendering the issue of the loan and the payment of its proceeds to the Viceroy of Canton impossible on the terms above named, then in such case the Corporation shall thereafter, at such time as the Chinese Government may decide within a period not exceeding eight (8) months, issue the loan and pay the proceeds thereof to the Viceroy, deducting and retain-

ing six (6) points from the rate at which the loan is actually issued to the public, whatever that rate may be (*i. e.* if the issue price be 101 the Viceroy will receive 95, and so on).

Subject to the provisions of Article 16, the duration of the loan is fixed at thirty (30) years commencing from the date of the signature of this Agreement, but no interest shall be paid on any bonds which may be redeemed or cancelled under the terms hereinafter mentioned after the redemption or cancellation thereof.

On the face of each of these bonds shall be expressed the value thereof in the sum of £100, or in such different amounts as the Chinese Minister in London, in consultation with the Corporation, may sanction.

It is understood that the Chinese Government may hereafter, in its discretion, appoint a Director-General of the Railway, upon whom, in such case, will devolve all the powers, functions and responsibility herein attributed to the Viceroy of Canton (hereinafter called the Viceroy).

Article 2.—The proceeds of the loan are to be used in the construction and equipment of the Railway, and in paying interest on the loan during the course of construction.

The Railway, being the first mortgage security for the loan, shall be built and equipped under the direction of the Viceroy, in accordance with the provisions of Article 6 hereinafter, and shall be built as economically as possible in accordance with the best modern system.

It is understood that the Viceroy will secure all the necessary land for the Railway, and will give the necessary instructions to expedite and facilitate the work of construction. The Railway will be built in the first instance as a single line, but provision will be made, with the approval of the Viceroy and wherever necessary to meet traffic requirements, for the eventual construction of a double line.

If, during the time of construction, the proceeds of the loan, together with the accrued interest thereon, payable by the Corporation, should, after the deduction of the sums necessary for the payments of interest on the loan, be insufficient to complete the construction of the Railway, the amount of the deficiency shall either be provided from the Chinese Government's own resources or by a supplementary loan to be hereafter issued by the Corporation, the interest and other conditions of which supplementary loan shall be arranged when the time arrives, having due regard to the conditions of the money market.

When the Railway is complete, if there is a surplus from the sale of bonds, the said surplus shall be at the disposal of the Chinese Government either to redeem the bonds in accordance with the terms of this Agreement, as hereinafter stated, or to be placed on deposit with the Hongkong and Shanghai Banking Corporation, for the purpose of paying interest on the loan, or for other purposes beneficial to the Railway, in regard to which the Viceroy will communicate in due course with the Corporation.

In all matters relating to the construction of the Railway it is expressly agreed that particular heed shall be paid to the opinions and habits of the Chinese people, and that, when practicable, Chinese shall be employed in positions of trust and responsibility in connection with the Railway.

In regard to earthwork, or such other work as Chinese are competent to perform, contracts shall be entered into for such work with Chinese, under the sanction of the Head Office, and the work itself shall be carried out in accordance with plans and specifications of the Engineer-in-Chief and under his supervision.

Detailed plans and estimates of cost, whether of the respective sections of the Railway, or of any alterations of the same, are to be submitted for the approval of the Viceroy, by the Engineer-in-Chief through the Managing Director.

Article 3.—The loan shall be secured by mortgage, declared to be now entered into in equity by virtue of this Agreement, and shall, as soon as possible hereafter, be secured by a specific and legal first mortgage in favor of the Corporation upon all lands, materials, rolling stock, buildings, property and premises, of every description purchased or to be purchased for the Railway, and on the Railway itself, as and when constructed, and on the revenue of all descriptions derivable therefrom.

The provisions of this Article in respect of the mortgage are to be construed and treated as equivalent in purport and effect to a mortgage, customarily executed and delivered in England to a Trustee, for the purpose of securing loans and bond issues upon Railway properties in foreign countries.

Article 4.—It is hereby agreed that in six (6) months after this Agreement is signed, the Corporation shall provide the amount necessary to proceed with the detailed survey of the Railway, and for preliminary construction work if necessary, whether this amount comes from the sale or hypothecation of the bonds, or from advances made, provided that bonds for the required amount shall have been executed and delivered to the Corporation. If, after expiration of eight (8) months from the date of ratification hereof, the work of construction shall not have been begun on the Railway, this Agreement is to become null and void, but if failure to commence construction be due to any cause of *force majeure*, a reasonable extension of this time-limit shall be arranged between the Viceroy and the Corporation.

Of the proceeds realized from the sale of the bonds, after deducting so much of them as may be required to be kept in England for the purchase of materials and the payments of contracts there, or for repayment of advances, such amounts as may be estimated and certified to by the Engineer-in-Chief to the Viceroy through the Managing Director, as being actually required for the construction of any particular section of the Railway, may be ordered by the Viceroy, after consideration, to be transferred to Hongkong to be kept in the Hongkong and Shanghai Bank, and place to the credit of the construction account of the Railway for the exclusive purpose of constructing the Railway in the manner herein provided for under the supervision of the Head Office and the Viceroy.

On each occasion of a remittance being made to China, the amount realized in Sycee will be reported to the Viceroy, and any portion which may not be required shall be placed at interest. Similarly, the balance in England shall be placed at interest, to be allowed at the usual rate.

The accounts of the money spent from time to time in England, and of the money transferred to the credit of the construction and other accounts for use in China, are to be submitted quarterly to the Head Office for report to the Viceroy, for the information of the Waiwupu, and for his further report to the Board of Revenue, and the Board of Communications, for record therein, after such accounts have been approved and signed by him.

Article 5.—As to the form of the bond, it is to be agreed upon by the Viceroy, or by the Chinese Minister in London and the Corporation, as soon as possible after the signature of this Agreement, but if, hereafter, the money markets in London or other countries require any modification of the form of the bond, except in anything that affects the amount of the loan and the liability of the Chinese Government, which are not to be touched at all, such slight modifications may be made to meet the views of the money markets by the Corporation in consultation with the Chinese Minister in London.

Any modifications are to be reported at once by the Corporation to the Viceroy for the approval of the Waiwupu.

The bonds are to be engraved entirely in the English language, and shall bear the facsimile of the signature of the Viceroy and of his seal of office, in order to dispense with the necessity of signing them all in person, but the Chinese Minister in London shall, previous to the issue of any Bonds, put his seal upon each bond with a facsimile of his signature, as a proof that the issue and sale of the bonds are duly authorized and binding upon the Chinese Government.

Such bonds are to be numbered consecutively; and as many bonds as may be needed are to be properly engraved under the supervision of the Corporation; and after they are sealed by the Chinese Minister in London, as hereintofore provided, are to be countersigned by the Corporation.

All expenses for the engraving, safe deposit, and sale of the bonds are to be borne by the Corporation.

Article 6.—When the work of construction is ready to begin, the Viceroy will establish a Head Office at Canton for the construction and management of the Railway. This Office will be under the direction of a Chinese Managing Director (appointed by the Viceroy) with whom will be associated a British Engineer-in-Chief, and a British Chief Accountant. These British employés shall be proposed and certified as competent for their posts by the Corporation, and shall be approved by the Viceroy; if their services should prove unsatisfactory to the Viceroy, he shall request the Corporation to dispense with their services and to nominate their successors, and, in the event of the Corporation desiring to remove them for good cause, it shall do so in consultation with the Viceroy. It is understood that the duties performed by these employés are intended to promote the mutual interests of the Chinese Government and the bondholders respectively, and it is therefore agreed that all cases of difference arising therefrom shall be referred for amicable adjustment between the Viceroy and the Representative of the Corporation. The salaries and other terms of agreement of the Engineer-in-Chief and the Chief Accountant shall be proposed by the Corporation, for approval by the Viceroy; and the amount of their salaries, etc., shall be paid out of the general accounts of the Railway.

For all important technical appointments on the Railway Staff, Europeans of experience and ability shall be engaged, and wherever competent Chinese are available they shall also be employed. All such appointments shall be made, and their functions defined, by the Managing Director and the Engineer-in-Chief in consultation, and shall be submitted for the Viceroy's approval; similar procedure shall be followed in the case of Europeans employed in the Chief Accountant's department. In the event of the misconduct, or the incompetency of European employés, their services may be dispensed with by the Managing Director, after consultation with the Engineer-in-Chief, and subject to the sanction of the Viceroy. The form of agreements made with European employés shall conform to the usual practice.

The accounts of the receipts and the disbursements of the Railway's construction and operation shall be kept in Chinese and English in the Department of the Chief Accountant, whose duty it shall be to organize and supervise the same, and to report thereon for the information of the Viceroy through the Managing Director, and of the Corporation. All receipts, and payments, shall be certified by the Chief Accountant and authorized by the Managing Director.

For the general technical staff of the Railway the necessary arrangements shall be made by the Managing Director in consultation with the Engineer-in-Chief, and reported to the Viceroy in due course.

The duties of the Engineer-in-Chief shall consist in the efficient and economical construction and maintenance of the Railway, and the general supervision thereof in consultation with the Managing Director. He shall always give courteous consideration to the wishes and instructions of the Viceroy, whether conveyed directly or through the Managing Director, and shall always comply therewith, having at the same time due regard to the efficient construction and maintenance of the Railway.

A school for the education of Chinese in railway matters shall be established by the Managing Director, subject to the approval of the Viceroy.

Article 7.—Under the provisions of Article 3 of this Agreement the properties covered by the first mortgage security hereby created include the Railway, its property and equipment, and the mortgage is to be executed by a deed in the form contemplated by the said

Article. But subject to the guarantee and mortgage thus given by the Chinese Government, it is hereby declared that this Railway is in fact a Chinese property.

All land that may be required along the whole course of the Railway within survey limits, and for the necessary sidings, stations, repairing shops and car sheds, to be provided for in accordance with the detailed plans now made, or hereafter to be made by the Engineer-in-Chief, and approved by the Viceroy, shall be acquired by the Viceroy at the actual cost of the land, and shall be paid for out of the proceeds of the loan.

The title deeds of the land for the Railway and all other lands shall be free from all encumbrances and entanglements and shall, from time to time, as soon as secured, be registered in the name of the Railway.

Notices of all purchases of lands for the Railway within the survey limit (together with corresponding title deeds) are to be transmitted by the Railway Head Office under the direction of the viceroy to the local Agent of the Corporation for record and preservation in its office in Hongkong, and for the purpose of establishing the first mortgage security until the time when the same are to be returned to the Viceroy, as hereinafter in this Article provided.

All lands, the title deeds of which are lodged with the Corporation as part of the first mortgage security of the loan, shall not be disposed of in any way by hire, lease, or sale, to any party, for any purpose whatsoever, without the written consent of the Viceroy, except only in the event of the Imperial Chinese Government failing to pay the interest or principal of the bonds, and then in accordance with the powers in the deed of mortgage.

The lands thus bought shall be free from all encumbrances, liabilities, and entanglements, and shall be conveyed by full and sufficient deeds of assignment according to Chinese law, all of which are to be kept and recorded in the Hongkong Office of the Corporation, and are to be held by it as a first mortgage security for the bonds under the provisions of this Agreement, until such time as principal and interest of the bonds, together with all indebtedness, shall have been paid off, when the same shall then be returned to the Viceroy, except only in the case of the Imperial Chinese Government's failure to pay the interest or principal of the bonds and consequent realization under the powers of the mortgage security.

For the proper protection of the first mortgage security the Chinese Government undertakes that until the bonds shall have been redeemed, no part of the lands comprised in the mortgage security or the Railway with its appurtenances shall be transferred or given to another party, or shall be injured, and that the rights of the first mortgage shall not be in any way impaired, unless with the consent in writing of the Corporation, which shall only be given if in the opinion of the Corporation the interests of the bondholders will not be affected.

And further, that until the interest and principal of the loan and all the indebtedness shall have been paid off, or unless with the express consent in writing of the Corporation, the Chinese Government or the Viceroy shall not again mortgage the above properties to another party whether Chinese or foreign.

During the period of this Agreement no special taxes shall be levied by the Chinese Government on the Railway, its appurtenances, or earnings: but all taxes at present payable, such as land tax, as well as any taxes which the Chinese Government may hereafter institute, such as stamp duty, etc., and which may be applicable generally to all commercial transactions in China, shall also apply in the case of the Railway and its operations.

Article 8.—It is agreed that if the half-yearly interest on the bonds is not paid on any due date thereof, or if the principal of the loan be not paid in accordance with the amortisation schedule hereto attached, the whole Railway with all its appurtenances herein mortgaged to the Corporation for the bondholders, shall be handed over to the Corporation to be dealt with by it according to law in such manner as will ensure the proper protection of the interests of the bondholders, provided, however, that if the failure to make payment at any one date be due to causes beyond the control of the Chinese Government, and if the Viceroy request the Corporation to postpone the taking over of the Railway for a reasonable period of grace, the question shall be amicably discussed and decided between the Viceroy and the Representative of the Corporation. When the whole loan and the interest due thereon and all the indebtedness shall have been paid off, the Railway with all its appurtenances in good working condition shall revert to the possession and management of the Chinese Government according to the provisions of this Agreement.

Article 9.—As remuneration for all services rendered by the Corporation, during construction of the Railway, the Corporation shall receive the sum of £35,000, half of which shall be paid when the construction work is half completed, but not later than eighteen (18) months after commencement of construction, and the other half upon completion of the line. This amount shall be regarded as a commutation of all commissions to which the Corporation and its Agents would properly be entitled, and of payments of all services rendered in the construction and equipment of the Railway, in respect of the present loan; but in the event of any branch lines being decided upon by the Chinese Government for construction in connection with this Railway, and if the Chinese Government decide to build the same by issue of a foreign loan and not from its own resources, then the Corporation shall have the first option of tendering for such loan, and a further payment proportionate to the amount of such supplementary loan, and calculated at the same rate as the commutation hereinabove mentioned, shall be made to the Corporation as commutation of its commission for all services in respect of construction.

In return for this commuted commission, the Viceroy is entitled to require the Corporation to superintend the purchase of all materials required for the construction and equipment of the Railway, which shall be purchased in the open market at the lowest rate obtainable, it being understood that all such materials shall be of good and satisfactory quality. At equal rates and qualities, goods of British manufacture shall be given preference over other goods of foreign origin. Invoices and inspector's certificates are to be submitted to the Viceroy.

With a view to encouraging Chinese industries, Chinese Government and other materials are to be preferred, provided price and quality are suitable.

No commission shall be allowed to the Corporation on the purchase of materials except as above provided. All trade discounts or rebates, if any, are, during construction, to go to the construction account, and after completion, to the credit of the Railway.

Article 10.—In the construction of the line, in the working of the Railway and in the performance of the different kinds of business connected with the Railway, no interference or obstruction by Chinese or foreigners will be permitted. The Chinese Government will provide protection for the Railway while under construction or when in operation, and all the properties of the Railway, as well as Chinese and foreigners employed thereon, are to enjoy the utmost protection from the local officials.

The Railway may maintain a force of Chinese police with Chinese officers, their wages and maintenance to be wholly defrayed as part of the cost of the construction and maintenance of the Railway. In the event of the Railway requiring further protection by the military forces of the Imperial or Provincial Governments, the same will be duly applied for by the Head Office and promptly afforded, it being understood that such military forces shall be maintained at the expense of the Government or the Province.

Article 11.—All receipts and earnings of the Railway shall be regularly paid into the Railway's account with the Hongkong and Shanghai Banking Corporation, and on such funds, whether on daily balance or on fixed deposit, the Bank's usual rate of interest shall be allowed.

All expenses of working and maintaining the line shall be paid from the receipts and earnings, and any remainder thereof shall be charged with the service of the loan. If, after payment of these expenses, and making due provision for payment of interest at 5 per cent. per annum on the bonds, and for repayments of principal due in accordance with the amortisation schedule hereto attached, there remain surplus funds unappropriated and properly available for other purposes, such funds shall be at the disposal of the Chinese Government to be used in such manner as the Viceroy may decide, provided always that after completion and opening of the line to traffic the amount sufficient for regular payments of interest and repayments of principal shall be deducted from such surplus funds, if any, and shall be deposited with the Hongkong and Shanghai Banking Corporation six months before the date at which such payments fall due.

In the event of there being no surplus funds available as aforesaid from the earnings of the Railway, the amount required for payments of interest and repayments of principal shall be provided in accordance with the conditions of Article 14 hereinafter.

Article 12.—The Corporation are hereby appointed Trustees for the bondholders, and in any future negotiations respecting these loans, or matters arising in connection therewith, which may take place between the Viceroy and the Corporation, the Corporation shall be taken as representing the bondholders, and as such empowered to act on their behalf. In view of the fact that the Corporation's responsibility to the bondholders continues after construction, whereas, as stated in Article 9, its commuted commission for services rendered is limited to the period of construction, and the Corporation is not thereunder entitled to any further remuneration during the period of the loan, the Corporation shall receive as remuneration for its services and responsibility in acting as Trustees for the bondholders the sum of £1,000 per annum, such remuneration to commence from the date of issue of this Loan and to terminate upon its complete redemption.

Article 13.—All materials of any kind that are required for the construction and working of the Railway, whether imported from abroad or from the provinces to the scene of the work, shall be exempted from likin so long as such exemption remains in force in respect of other Chinese Railways. The bonds of this loan, together with their coupons and the income of the Railway, shall be free from imposts of any kind by the Government of China.

Article 14.—It is agreed that during the time of the construction of the Railway, the interest on the bonds and on any advances made by the Corporation is to be paid from the proceeds of the loan. The accruing interest from any proceeds of the loan not used during the period of construction, and the earnings derived by the Chinese Government from the working of any sections of the Railway as they are built, are to be used to make up the amount required for the payment of the said interest, and if any deficiency remains it is to be met from the proceeds of the loan.

When the construction of the Railway is wholly completed, the interest on the bonds is to be paid, from the income or earnings of the Railway received by the Chinese Government, every half-year on the first day of June and the first day of December.

It is hereby agreed that the amount required for the payment of interest and the repayment of principal, together with a sum of one-quarter of one per cent. on such amounts, to cover commission to the Hongkong and Shanghai Banking Corporation, who are hereby appointed Agents for the entire service of repaying the loan, shall be paid to them fourteen (14) days before the due dates in Hongkong or in Canton (at the option of the Viceroy when settling exchange) in local currency sufficient to meet such payments in sterling in London, exchange for which shall be settled with the Hongkong and Shanghai Banking Corporation, the Viceroy having the option of settling exchange at any date or dates within six (6) months previous to any due date for the repayment of interest and principal.

The Chinese Government unconditionally undertakes, and hereby promises, to pay the principal of the loan and the interest on the loan on the due dates fixed therefor. If, at any time, the earnings of the Railway together with funds available from the proceeds of the loan, are not sufficient to meet the interest on the bonds and the repayment of capital in accordance with the amortisation schedule hereto attached, the Viceroy shall devise means for supplying the deficiency; and should his inability to do so appear probable, he shall memorialise the Government to take measures to make up the deficiency from other sources, and thus be ready to pay off the indebtedness, so that the required amount may be placed in each case at least fourteen days previous to the due dates of such payments in the hands of the Hongkong and Shanghai Banking Corporation.

Article 15.—The Corporation may, subject to all its obligations, transfer or delegate all or any of its rights, powers, and discretions to its successors or assigns, but the Corporation, which is a Corporation formed under English law, shall not transfer its rights under this Agreement to any other nation, or people of any other nationality, except British or Chinese. Similarly, the Chinese Government's rights and authority under this Agreement shall not be transferred to persons of other nationality.

It is further understood that the Chinese Government will not build another line competing with this Railway to its detriment.

Article 16.—The term of the loan, as stated in Article 1, shall be thirty (30) years. Repayment of principal shall commence after the expiry of 12½ years from the date of the loan and shall be completed in 17½ years by yearly payments to the Hongkong and Shanghai Banking Corporation as Agents for the service of the loan, acting for the Corporation under the terms of this Agreement, in accordance with the amortisation schedule hereto attached.

If at any time after the expiry of 12½ years from the date of the loan, the Imperial Chinese Government should wish to redeem the outstanding amount of the loan, or any portion of it, not yet due under the provisions of the amortisation schedule hereto attached, not less than six months' notice shall be given in writing by the Viceroy to the Representative of the Corporation, declaring the number of additional bonds so required to be redeemed, whereupon the Representative of the Corporation shall immediately proceed to make such arrangements as may be necessary and usual for the redemption of the number of bonds specified, which, when duly redeemed after payment by the Imperial Chinese Government of the proper amount due thereon, shall be cancelled and delivered to the Viceroy.

All bonds thus redeemed, in excess of the amount specified in the amortisation schedule hereto attached, before the expiry of 25 years from the date of the loan, shall be paid for with a premium of 2½ per cent. over their face value (*i. e.* £102, 10s. will be required to pay for £100), but, after 25 years, bonds may be redeemed over and above the amounts specified in the schedule without premium, upon notice being given in the manner above specified.

As soon as the loan has been completely redeemed, this Agreement shall become null and void and the mortgage shall be cancelled.

Article 17.—If, during construction, any proceeds of the sale of the bonds are lying unused and bearing interest on their deposit whilst the construction of the Railway is going on, such interest is to be credited to the general account of the Railway in order that the Railway may enjoy the full advantage thereof.

It is also agreed that, if the Corporation shall think it expedient before the sale of any of the bonds to advance any money for the work, such advances, together with the interest thereon, not exceeding a charge of 6 per cent. per annum, shall be deducted from the proceeds of the sale of the bonds.

Article 18.—The junction of the sections of the Railway from Canton to the boundary of the Kowloon leased territory under British control, and from the said boundary to the port of Kowloon respectively, and the subsequent joint working of the two sections, shall be arranged by agreement between the Viceroy of Canton and the Governor of Hongkong.

Article 19.—This Agreement is signed under the authority of an Imperial Edict dated ...., which has been officially communicated to the British Minister in Peking by the Wai-wu-pu.

Article 20.—This Agreement is executed in quintuplicate in English and Chinese, one copy to be retained by the Viceroy, one by the Wai-wu-pu, one by the Board of Communications, one by the British Minister, and one by the Corporation; and should any doubt arise as to the interpretation of the Agreement the English text shall be accepted as the standard.

Signed at Peking by the contracting parties, this 23rd day of the first month of the 33rd year of the Emperor Kwang Hsu, being the 7th day of March, 1907.

Seal of Wai-wu-pu.

Signature of TANG SHAO-YI.

Witnessed by Canton Viceroy's Delegates, TAO-TAIS KUNG and HU.

For the British and Chinese Corporation,
J. O. P. BLAND.
Representative in China.

Witnessed by—
MESSRS. JARDINE, MATHESON & Co., and H. S. GARDNER, Agent H. & Sh. Bkg. Corporation.
Joint Agents, B. & C. Corporation.

SHANGHAI-HANGCHOW-NINGPO LOAN AGREEMENT.

This Agreement is made at Peking on the fourth day of the second month of the thirty-fourth year of Kuang Hsu, corresponding to the sixth day of March, 1908, and the contracting parties are:—

The Waiwupu (Board of Foreign Affairs) and

The Yuchuanpu (Board of Communications), acting under the authority of an Imperial Decree, of the one part, and the British and Chinese Corporation, Limited (hereinafter called "The Corporation") of the other part.

Article 1. The Imperial Government of China authorizes the Corporation to issue a five per cent gold loan for the amount of £1,500,000 sterling. The loan shall be of the date on which it is issued to the public and shall be called "The Imperial Chinese Government five per cent. Shanghai-Hangchow-Ningpo Railway Loan."

Article 2.—The loan is designed to provide capital for the construction of a railway line (hereinafter called "the railway") from a point connecting with the Shanghai-Nanking Railway at or near Shanghai in Kiangsu to the cities of Hangchow and Ningpo in Chekiang. The railway shall follow a line from Shanghai through Fengchingchen to Kahsingfu; and thence to Hushu and Hangchow; and thence from Chiangkan to Ningpo, on which line certain construction work has already been locally undertaken under authority of the Imperial Chinese Government.

The survey line shall be open to revision by the Yuchuanpu.

Article 3.—The Chinese Government guarantees that the capital so provided shall be solely devoted to the construction of the railway including the purchase of rolling stock and other equipment and to the working of the line during construction; it is understood, however, that the cost of the land required for the railway and the payment of interest on the Loan during construction are not to be met out of Loan funds, but will be paid by the Imperial Chinese Government from other sources. It is understood that the railway will be completed within three years from the date of signature of this Agreement; and that within a period of six months from that date the Corporation shall notify the Yuchuanpu that the sum of £100,000 has been placed at their disposal, to be held in Europe or remitted to China as they may direct, as a first instalment on account of the proceeds of the Loan. This amount of £100,000, or whatever portion thereof is actually advanced, together with interest thereon not exceeding a charge of six per cent per annum, shall be deducted from the proceeds of the sale of the bonds.

Article 4.—The rate of interest for the Loan shall be five per cent per annum on the nominal principal and shall be paid to the bondholders half-yearly. The said interest shall be calculated from the date on which the Loan is issued to the public and shall be paid by the Imperial Chinese Government during the time of construction from Chinese sources, and afterwards, in the first place out of the revenues of the railway, and should these be insufficient then from the surplus earnings of the Imperial Railways of North-China (excluding the section of the Hsinmintun-Mukden line to the East of the Liao River) and thereafter, if necessary, from such other revenues as the Chinese Government may see fit to use for the purpose, in half-yearly instalments according to the amounts specified in the schedule attached to this Agreement and fourteen days before their due dates, Western Calendar as calculated half-yearly from the date on which the Loan is issued to the public.

Article 5.—The term of the Loan shall be thirty years. Repayment of principal shall commence after the expiry of ten years from the date of the Loan, and, except as provided in Article 6 hereinafter, shall be made by yearly amortization to the Hongkong and Shanghai Banking Corporation in half-yearly instalments, out of the revenues of the railway, and should these be insufficient, then from the surplus earnings of the Imperial Railways of North-China (excluding the section of the Hsinmintun-Mukden line to the East of the Liao River) and thereafter, if necessary, from such other revenues as the Imperial Chinese Government may think fit to use for the purpose, according to the amounts specified in the schedule attached to this Agreement, and fourteen days before their due dates Western Calendar, as calculated half-yearly from the date on which the Loan is issued to the public.

Article 6.—If at any time after the lapse of ten years from the date of the Loan, the Imperial Chinese Government should desire to redeem the whole outstanding amount of the Loan, or any portion of it, not yet due for repayment in accordance with the schedule of repayments hereto attached, it may do so until the twentieth year by payment of a premium of 2½ per cent on the face value of the bonds (that is to say, by payment of £102.10|- for each £100 bond) and after the twentieth year, without premium; but in each and every case of such extra redemption the Imperial Chinese Government shall give six months' notice in writing to the Corporation, and such redemption shall be effected by additional drawings of bonds, to take place on the date of an ordinary drawing as provided for in the prospectus of the Loan.

Article 7.—The Hongkong and Shanghai Banking Corporation having been appointed by the British and Chinese Corporation, Limited, Agents for the service of the Loan, the half-yearly payments due for amortization and interest, referred to in Articles 4 and 5, shall be made in accordance with the amounts of the schedule attached to this Agreement, and fourteen days before their due dates, as fixed by Articles 3 and 5, to the Hongkong and Shanghai Banking Corporation by the Yuchuanpu or its duly appointed representative, who shall hand to the said Bank in Shanghai, fourteen days before the said due dates, funds in Shanghai sycee sufficient to meet such payments in sterling in London, exchange for which shall be settled with the Bank; the Yuchuanpu, or its duly appointed representative, having, however, the option of settling exchange with the Bank at any date or dates within six months previous to any due date for the repayment of interest and principal. These payments may, however, be made in Gold if the Imperial Chinese Government should happen to have Gold funds "bona-fide" at their disposal in Europe, not remitted from China for the purpose, and desire so to use them.

In reimbursement of expenses connected with the payment of interest and the repayment of principal of the Loan, the Hongkong and Shanghai Banking Corporation will re

ceive a commission of one quarter per cent on the annual Loan service.

Article 8.—The Imperial Government of China hereby engages that the interest and principal of this Loan shall duly be paid in full, and should the revenues of the Railway, together with the surplus earnings of the Imperial Railways of North China (excluding the section of the Hsinmintun-Mukden line to the East of the Liao River), not be sufficient to provide for the due and full payment of interest and repayment of principal, the Yuchuanpu shall memorialize the Throne and the Imperial Government of China will thereupon make arrangements to ensure that the amount of deficiency shall be met from other sources and handed over to the Bank at the date upon which funds are required to complete full payment of interest and repayment of principal.

Article 9.—The Loan is hereby secured upon the surplus earnings of the Imperial Railways of North-China (excluding the section of the Hsinmintun-Mukden line to the East of the Liao River), that is to say, that after deducting from the net earnings of that railway the amounts required to meet the payments of interest and repayments of principal due in terms of the Agreement of October 10, 1898, (Kuang Hsu 24th year, 8th moon, 25th day) to the bondholders of the Imperial Chinese Government Loan of that year, then the payment of interest and repayment of principal of the present Loan shall be a first charge upon the said surplus earnings of the Imperial Railways of North-China (excluding the section of the Hsinmintun-Mukden line to the East of the Liao River) and no deductions or payments shall be made from the earnings of the said railway other than those required to meet the obligations stated in the Loan Agreement of October 10, 1898, (Kuang Hsu 24th year, 8th moon, 25th day) until an amount sufficient to pay the next half-yearly instalment of interest and principal of the present Loan shall have been placed on deposit with the Hongkong and Shanghai Banking Corporation as security for the due payment of the same.

Article 10.—The Corporation is hereby authorized to issue to subscribers to the Loan, bonds for the total amount of the Loan for such amounts as may appear advisable to the Corporation. The form of the bonds shall be settled by the Corporation in consultation with the Yuchuanpu or its duly authorized representative or with the Chinese Minister in London. The bonds shall be engraved in Chinese and English; they shall bear the facsimile of the signature of the Yuchuanpu's duly authorized representative and of his seal of office (in order to dispense with the necessity of his signing them all in person), but the Chinese Minister in London shall, previous to the issue of any bonds, put his seal upon each bond with a facsimile of his signature as a proof that the issue and sale of the bonds are duly authorized by, and binding upon, the Imperial Chinese Government, and the representative of the Corporation in London shall countersign the bonds as agents for the issue of the Loan.

If any of the bonds herein mentioned are lost or destroyed a reissue of any thereof is to be made in the amounts respectively called for by such lost or destroyed bonds, but proper proof of the loss or destruction must be given in the usual form to the Corporation and the Chinese Minister in London for examination and record and the requisite guarantee is to be obtained by the Corporation from the respective claimants concerned, who shall defray all expenses connected with such reissue of bonds lost or destroyed and who under the said guarantee shall undertake to indemnify the Imperial Chinese Government and or the Corporation for any loss sustained by reason of the issue of bonds in the place of bonds lost or destroyed.

Article 11.—All bonds and coupons and payments made and received in connexion with the service of this Loan shall be exempt from all Chinese taxes and imposts during the currency of this Loan.

Article 12.—All details necessary for the prospectus and connected with the payment of the interest and repayment of the principal of this Loan not herein explicitly provided for shall be left to the arrangement of the Corporation in consultation with the Chinese Minister in London. The Corporation is hereby authorized to issue the prospectus of the Loan as soon as possible after the signing of this Agreement and the Imperial Government will instruct the Chinese Minister in London to co-operate with the Corporation in any matters requiring conjoint action and to sign the prospectus of the Loan.

Article 13.—The Loan shall be issued to the public in one series of bonds, as soon as possible after signature of this Agreement and not later than twelve months from the date thereof. The price to the Imperial Chinese Government shall be 93% of the nominal value of the bonds. Subscriptions will be invited by the Corporation in England and in China both from Chinese and Europeans on equal conditions, preference being given to the application by the Chinese Government provided that such application be made before the issue of the prospectus to the public.

Article 14.—The proceeds of the Loan shall be paid to the credit of the Yuchuanpu with the Hongkong and Shanghai Banking Corporation in China or London as the case may be. Payments of the Loan proceeds into the credit of this account shall be made in instalments and on dates conforming to the conditions allowed to the subscribers to the Loan. Interest at the rate of four per cent per annum shall be granted on the credit balance of the portion of this account kept in London; and interest on the credit balance of the portion kept in China will be allowed at the Bank's rates for current account or fixed deposits, as the case may be, to be arranged.

The Bank will hold the net proceeds of the Loan with accrued interest to the order of the Yuchuanpu, or its duly authorized representative, who, in ordering payment of any sums exceeding £20,000, shall give notice to the Bank ten days before the day on which they are required. Requisitions on the Loan funds will be drawn in amounts to suit the progress of construction of the Railway by orders on the Hongkong and Shanghai Banking Corporation, signed by the Yuchuanpu or its duly authorized representative, and accompanied by his certificates or those of the said Board stating the nature and cost of the work to be paid for.

Such amounts as may be required for expenditure in China may be transferred under the instructions of the Yuchuanpu, at their discretion, to Shanghai, the transfers being effected through the Hongkong and Shanghai Banking Corporation, and the transferred funds shall remain on deposit with that Bank until required for railway purposes.

The Yuchuanpu will cause to be published annually, upon the close of the Railway's financial year, a report in the Chinese and English languages showing the working accounts and traffic receipts of the Railway, which report shall be procurable by the public on application.

Article 15.—If, during the time of construction the net proceeds of the present Loan with accrued interest should not be sufficient to complete the construction and equipment of the Railway line, the amount of deficiency shall be provided in the first place from such Chinese funds as may be available so as to permit of the uninterrupted continuance of the work of construction, any balance then uncovered being supplemented by a further foreign loan for the amount required, to be issued by the Corporation. The interest and other conditions of such supplementary Loan will be the same as in the present agreement, and the price payable to the Imperial Chinese Government will be the actual rate of its issue to the public less flotation charges of 5/8 points retainable by the Corporation, that is to say, £5. 10|- for every £100 bond issued.

If, after completion of the line, there should remain a balance of Loan funds at the credit of the Railway account, such unused balance shall be at the disposal of the Yuchuanpu to be used either for the purpose of paying interest on the Loan or for the equipment of the Railway, or for the construction and equipment of branch lines beneficial to the Railway.

Article 16.—If, before the publication of the prospectus for the issue of the Loan, any political or financial crisis should take place by which the market and the prices of existing Chinese Government stocks are so affected as to render in the opinion of the Corporation the successful issue of the Loan impossible on the terms herein named, the Corporation shall be granted further extension of time, but not beyond eighteen months from the date of this Agreement, for the performance of their contract. If, within this time limit the Loan shall not have been issued, this contract shall become null and void, and any advances made by the Corporation under the provisions of Article 3 shall be repaid by the Chinese Government with accrued interest, but without any other compensation or remuneration whatsoever.

Article 17.—The construction and control of the Railway will be entirely vested in the Imperial Chinese Government. For the work of construction the Yuchuanpu, or its duly appointed Managing Director, will select and appoint a British Chief Engineer, who shall be a professional man of established reputation to be selected either in England or from the staff of one of the existing Chinese Government Railways. The Chief Engineer will be under the orders of the Managing Director, or, in his absence, of his duly authorized representative. In his general conduct he shall pay all due respect to the Managing Director. The terms of the Chief Engineer's agreement will be arranged by the Yuchuanpu or its duly appointed Managing Director.

Whenever appointments are to be made or functions are to be defined of the technical employees on the Railway staff, as well as in the case of their dismissal, the Managing Director, or in his absence, his duly appointed representative, will act in consultation with the Chief Engineer and, in the case of disagreement, the matter will be referred to the Yuchuanpu, whose decision shall be final. After completion of construction the Imperial Chinese Government will retain the services of an Engineer-in-Chief who during the period of the Loan shall be a British subject.

Article 18.—During the construction of the Railway the Corporation will act as its Agents for the purchase of all materials, plant and goods required to be imported from abroad. For all important purchases of such materials, tenders shall be called for by the Managing Director; in the case of all tenders, indents and orders for the importation of goods and materials required on the terms most advantageous to the Railway. It is understood that no orders for materials shall be executed or any expenditure incurred without due authorization by the Managing Director.

As remuneration for its services as Agents of the Railway during construction, the Corporation shall receive the sum of £35,000, half of which shall be paid when the construction work is half completed but not later than eighteen (18) months from the date of this agreement, and the other half upon completion of the line. This amount shall be regarded as commutation of all commissions to which the Corporation and its Agents would properly be entitled and of payments for all services rendered in the construction and equipment of the Railway in respect of the present Loan; but in the event of a further Loan being required under the provision of Article 15 hereinabove, then a further payment of commuted commission, proportionate to the amount of such supplementary Loan and calculated at the same rate as the commutation hereinabove mentioned, shall be made to the Corporation as commutation of its commission for all services in respect of construction.

In return for this commuted commission the Corporation as Agents shall be prepared to superintend the purchase of all foreign materials required for the construction and equipment of the Railway which shall be purchased in the open market at the lowest rate obtainable, it being understood that all such materials shall be of good and satisfactory quality. At equal rates and qualities goods of British manufacture shall be given preference over other goods of foreign origin. The Managing Director shall have the right, while paying the above stipulated commutation of commission to the said Agents, in respect of all purchases of foreign materials, to avail himself of the services

of other Agents in China or abroad should he see fit to do so.

Original invoices and inspectors' certificates are to be submitted to the Managing Director; all return commissions and rebates of every description shall be credited to the Railway; and all purchases made by the Agents on behalf of the Railway shall be supported by manufacturers' original invoices and inspectors' certificates.

No commission shall be paid to the Agents except as above provided; but it is understood that the Yuchuanpu or its duly authorized representative shall provide out of Railway funds for the remuneration of Consulting Engineers whenever their services are required for general assistance and advice or for the inspection abroad of materials requiring supervision of technical experts.

With a view to the encouragement of Chinese industries, preference shall be given, at equal prices and qualities, over British and other foreign goods, to Chinese goods and materials manufactured in China. No commission will be paid on purchases of such materials and goods.

It is understood and agreed that after the construction of the line is completed, the Corporation will be given the preference for such Agency business during the currency of the Loan for the supply of foreign materials as may be required for the Railway, on terms to be hereafter mutually agreed upon.

Article 19.—Branch lines in connexion with the Railway mentioned in this Agreement, that may appear profitable or necessary later on, shall be built by the Imperial Chinese Government with funds at their disposal from Chinese sources, and if foreign capital is required, preference will be given to the Corporation.

Article 20.—By the preliminary agreement dated October 15, 1898 (Kuang Hsu 24th Year, 9th Moon, 1st Day) participation of twenty per cent of the net profits of the Railway had been promised to the Corporation in remuneration for their general responsibility and services. In commutation of this participation in net profits, the Corporation is granted the right to retain £67,500 out of the proceeds of the Loan in instalments and on dates in proportion to, and based on, the terms of subscription to the Loan, as stated in the prospectus. No further payment in respect of commutation of profits will be allowed on any supplementary Loans.

Article 21.—After payment of interest and repayment of principal of the Loan for any current year, the Yuchuanpu shall deposit with the Hongkong and Shanghai Banking Corporation in Shanghai any surplus of the net revenue of the Railway line for that year up to the amount required to pay the following year's instalments of interest on the loan; the rate of interest on the deposit being arranged with the Bank from time to time with due regard to the conditions of the market.

Article 22.—The Corporation may, subject to all its obligations under this Agreement, transfer or delegate all or any of its rights, powers or discretions thereunder to any British Company, Director or Agent, with power of further transfer and subdelegation, such transfer, subtransfer, delegation or subdelegation, to be subject to the approval of the Yuchuanpu.

Article 23.—This Agreement is signed under authority of an Imperial Decree of this date which has been officially communicated to the Minister of Great Britain in Peking by the Waiwupu.

Article 24.—Three sets of this agreement are executed in English and Chinese, two sets to be retained by the Imperial Chinese Government and one by the Corporation; in the event of any doubt arising regarding the interpretation of the contract the English text shall rule.

Signed at Peking by the contracting parties this fourth day of the second month of the thirty-fourth year of the Emperor Kuang Hsu, being the sixth day of March nineteen hundred and eight.

Signed,
HU HUI-TE,
LIANG SHING-YI,
KAO ERH-CH'IEN.

[Seal of Waiwupu].

For the British and Chinese Corporation, Ltd.,
J. O. P. BLAND,
Representative in China.

PRELIMINARY AGREEMENT BETWEEN THE HONGKONG AND SHANGHAI BANKING CORPORATION AND DIRECTOR-GENERAL HU, RESPECTING THE PEKING-NEWCHWANG RAILWAY LOAN.

This is a preliminary Agreement made between his Excellency HU, Governor of Peking and Administrator-General of the Imperial Railways of North China within and without the Great Wall, hereinafter called the Administrator-General, of the one part; and the Hong Kong and Shanghai Banking Corporation, representing a British Syndicate, hereinafter called the Syndicate, of the other part.

1.—The Syndicate is hereby authorized by the Administrator-General to make arrangements to float and issue, on behalf of the Railway Administration, on the best terms obtainable on the market, a sterling loan for the equivalent of about 16,000,000 taels, for the construction of railway line from Chung-hou-sou to Hsin Ming-tien, and a branch line to Ying-tzu, and for the redemption of existing loans to the Tientsin-Shan-hai-kuan and Tientsin-Lu-kou-chiao lines.

2.—The security for the loan shall be the permanent way, rolling-stock, and entire property, together with the freight and earnings of the existing lines between Peking, Tientsin, Tang-ku, and Chung-hou-sou, and also of the proposed new lines when constructed, in addition to the rights of mining coal and iron, which will be retained by the Railway Administration on each side of the proposed new lines, for a distance to be determined. In the event of default or arrears in payment of interest or payments of principal, the said railway lines and mines shall be handed over to representatives deputed by the Syndicate, to manage them on their behalf, until principal and interest of the loan are redeemed in full, when the management will revert to the Railway Administration.

It will, however, be provided that if such arrears are for a small sum, and it appears desirable to the Syndicate to extend the due date of their payment for a term not exceeding three months, it shall be open to the syndicate to do so.

In the event of any special circumstances arising, necessitating the introduction of important changes by the management aforesaid, these changes shall be effected in consultation with the Administrator-General, and in the best interests of the railway. In the case of war or famine, troops and grain will be transported over the line on terms to be arranged hereafter.

No further loan, charge, or mortgage shall be charged on the security named above until this loan is redeemed.

3.—During the currency of the loan the principal members of the railway staff shall be capable and experienced Europeans, who shall be, as at present, appointed by the Administrator-General of the Railway, and may be, in the event of their misconduct or incompetency, dismissed, after consultation with the Chief Engineer. If there are Chinese, with sufficient engineering or traffic experience, they may be appointed as well as Europeans. Should it be necessary to appoint a new Chief Engineer, such appointment shall be made in consultation with the Syndicate.

In addition to above, a capable and experienced European Railway Accountant shall be appointed to inspect all the accounts of the railways.

All receipts and earnings of the lines herein specified shall be paid into the credit of the Railway Administration with the Hong Kong and Shanghai Banking Corporation, Tientsin, together with 50,000 taels annually payable under the Board of Revenue's arrangement, approved by the Throne, by each of the provinces of Shansi, Shensi, Honan, and Anhui, for railway purposes for ten years.

All expenses of repairing and maintaining lines will be paid from this account, the remainder of which shall then be charged with the service of this loan.

4.—The rate of interest, price, term of years, and other particulars shall be left to the Syndicate to arrange, on the best terms possible, on the market, when the moment appears favorable for floating the loan. Instalments of proceeds will be arranged as far as possible to suit the progress of construction and the requirements of the Administrator-General, interest being calculated from the date of such payments. The loan will be redeemable by annual drawings to be scheduled in the final agreement. Besides the drawings so scheduled the Administrator-General may from time to time, on giving due notification to the Syndicate, call for extra drawings to be held, bonds so drawn being redeemed by the Railway Administration at 20 per cent. premium on their par value.

5.—If it shall be found that the loan cannot be floated without the introduction of some special attraction, the Administrator-General shall memorialise the Throne, recommending that a concession of mining rights be granted to the Syndicate at a point or points on the lines, and on terms to be arranged with the Syndicate on the basis of the Mining Regulations newly established by the Tsung-li Yamen. The requests of the Syndicate will be confined to mines within a distance of 5 li of the railway.

6.—The date of issue of this loan shall be left to the discretion of the Syndicate, to be fixed in accordance with the state of the market, but should it be found impossible to issue it before the 1st day of October next, the Syndicate will arrange to advance to the Administrator-General, on or about that date, an instalment of about 2,000,000 taels on account of, and repayable out of the proceeds of the loan when floated. The terms of this advance shall be left to the arrangement of the Syndicate on the best terms obtainable, interest not to exceed the rate of 5½ per cent. per annum, and the Syndicate shall be authorized to issue temporary bonds for the amount if required.

7.—For the satisfaction of the investing public who are unacquainted with China a satisfactory report will be required from District Engineer, Mr. J. Ginnell, as to the condition and earning power of the old lines, and as to the route, prospects, and mineral wealth of the new lines to be constructed, and Mr. Ginnell shall be instructed by the Administrator-General to proceed to London as soon as possible after the signing of this preliminary Agreement, to confer with the Syndicate on these matters.

8.—The terms of this preliminary Agreement will, immediately after signature, be submitted by the Administrator-General to the Throne for sanction by Imperial Edict, which shall be officially communicated by the Tsung-li Yamen to the British Minister in Peking.

9.—Three months from the date of signature of this preliminary Agreement shall be allowed to the Syndicate to accept or decline its terms. Upon their confirmation by the Syndicate this preliminary Agreement shall be replaced by a definitive Agreement, providing for all details.

Signed at Peking, this 7th day of June 1898, being the 19th day of the 4th moon of the 24th year of the Emperor Kuang Hsu.

(Seal of Administrator-General of Railways within and without the Shan-hai-kuan boundary.

For the Hong Kong and Shanghai Banking Corporation,
(Signed) E. G. HILLIER, *Agent.*

DEFINITIVE AGREEMENT BETWEEN THE BRITISH AND CHINESE CORPORATION (LIMITED) AND DIRECTOR-GENERAL HU RESPECTING THE PEKING-NEWCHWANG RAILWAY LOAN.

This agreement is made between His Excellency Hu, Governor of Peking, as Administrator-General of the Railways of North China within and without Shan-hai-kuan, acting under the authority of the Imperial Chinese Government, hereinafter called the "Administrator-General," of the one part, and the Hong Kong and Shanghai Banking Corporation, for themselves and on behalf of the British firm of Jardine, Matheson & Co., representing as joint agents the British and Chinese Corporation (Limited), hereinafter called the "Corporation" of the other part:

Whereas, on the 7th day of June 1898, being the 19th day of the 4th month of the 24th year of the Emperor Kuang Hsu, a preliminary Agreement was signed at Peking between the Administrator-General and the Hong-Kong and Shanghai Banking Corporation, representing a British Syndicate, for a sterling loan for the equivalent of about 16,000,000 taels, for the construction of a railway line from Chung-hou-sou to Hsin-ming-ting and a branch line to Ying-tzu, and for the redemption of existing loans made to the Tientsin-Shan-hai-kuan and Tientsin-Lu-kou-chiao Railway lines: and

Whereas in terms of the preliminary Agreement a period of three months from its date was allowed to the Syndicate to accept or decline its conditions: and

Whereas the Hong Kong and Shanghai Banking Corporation, before the expiration of the period named, duly notified the Administrator-General that it is prepared, with certain modifications, to arrange the issue of the loan upon the conditions named in the preliminary Agreement:

1.—The Corporation agrees to issue on behalf of the Administrator-General a sterling loan for the amount of £2,300,000, the proceeds of which are to be applied in the order following:—

(1).—To the redemption forthwith or at maturity of the loans and advances specified in the statement attached to this Agreement which have been made by foreign banks to the Tientsin-Shan-hai-kuan and the Tientsin-Lu-kou-chiao Railway lines. The Administrator-General hereby certifies that the total amount of the liabilities due by the lines named does not exceed the sum of 3,000,000 taels.

(2).—To the carrying out, within a period of three years from the date of this Agreement, of certain improvements and additions to rolling-stock on the existing lines between Peking and Shang-hai-kuan, recommended by the European Chief Engineer, and estimated by him to cost about 1,500,000 taels.

(3).—To the construction of a railway line from Chung-hou-so to Hsin-ming-ting, and one from a point on that line near Shih-san-chan to Ying-tzu, and of a branch line from Nu-erh-ho to the collieries of Nanp'iao.

The Administrator-General engages that the construction of the new lines here specified shall be completed within a period of three years from the date of this Agreement.

2.—In the event of the proceeds of this loan being insufficient for the completion of the new lines here specified, the Administrator-General will provide or will arrange with the Imperial Government of China to provide funds from other sources sufficient to complete their construction.

3.—This loan shall be a first charge upon the security of the permanent way, rolling-stock, and entire property, with the freight and earnings of the existing lines between Peking and Shan-hai-kuan, and on the freights and earnings of the new lines when constructed. The Administrator-General shall, during the continuance of this loan, maintain the railway buildings, works, rolling-stock, and dependencies in good order and condition, and shall increase the rolling-stock from time to time to such extent as shall be necessary for the requirements of the traffic.

Should it be decided hereafter to construct branch lines or extensions connecting with the lines herein named, their construction shall be undertaken by the Railway Administration, and should the funds of the Railway Administration be insufficient for that purpose, it shall apply to the Corporation for the same.

4.—The principal and interest of this loan are guaranteed by the Imperial Government of China, and in the event of default in pay ent of interest or repayment of principal at due date, the Corporation shall immediately notify the Imperial Government of China thereof, and the Imperial Government of China will thereupon provide the funds necessary to meet such payment in sterling in London. In the event of the Imperial Government of China being unable to provide the funds necessary to meeting a payment of interest or principal when called upon by the Corporation to do so, in terms of this clause, the said railway lines and entire property shall thereupon be handed over to representatives deputed by the Corporation to manage, on their behalf, until principal and interest of the loan have been redeemed in full, when the management will revert to the Railway Administration. It is provided that should arrears of interest or principal be for a small sum, and it appear desirable to the Corporation to extend the due date of their payment for a term not exceeding three months, it shall be open to the Corporation to do so.

This arrangement, which differs from other contracts in that the Administrator-General retains control of the railway lines so long as the principal and interest of this loan are regularly paid, has been agreed to in consequence of the friendly relations which have long existed between the Contracting Parties.

5.—No further loan shall be charged upon the security named above, except through the Corporation, until the loan is redeemed; and the Tsung-li Yamen will hand to the British Minister in Peking a written undertaking on behalf of the Imperial Government of China, that the railway lines named in this Agreement shall never be alienated or parted with.

6.—During the currency of this loan the Chief Engineer of the railways shall be a British subject. The principal members of the railway staff shall be capable and experienced Europeans, who shall be, as at present, appointed by the Administrator-General of the Railways, and may be, in the event of their misconduct or incompetency, dismissed after consultation with the Chief Engineer.

If there are Chinese with sufficient engineering or traffic experience they may be appointed as well as Europeans.

Should it be necessary to appoint a new Chief Engineer; such appointment shall be made in consultation with the Corporation.

In addition to the above, a capable and efficient European Railway Accountant shall be appointed, with full powers to organize and direct the keeping of the railway accounts, and to act with the Administrator-General and the Chief Engineer of the railway in the supervision of receipts and expenditure.

7.—The railway lines named in the Agreement being Imperial Government lines, in the event of war or famine, Chinese Government troops and grain may be transported over the lines free.

8.—All receipts and earnings of the lines herein specified shall be paid into the credit of the Railway Administration with the Hong Kong and Shanghai Banking Corporation, Tientsin, together with 50,000 taels annually, payable under the Board of Revenue's arrangement approved by the Throne, by each of the provinces of Shansi, Shensi, Honan, and Anhui, for railway purposes for ten years.

All expenses of working and maintaining the lines will be paid from their receipts and earnings, the remainder of which, together with the provincial funds above named, shall then be charged with the service of this loan. Payments of interest and repayments of principal shall be made in equal monthly instalments, and in accordance with the amounts and dates of a yearly schedule which will be furnished to the Administrator-General by the bank. These payments shall be made by the Administrator-General to the Hong Kong and Shanghai Banking Corporation, Tientsin, in Hongping sycee sufficient to provide the sterling amount due to the bondholders in terms of the prospectus of the loan, the rate of exchange for these payments being fixed by that bank as each such payment becomes due. In reimbursement of expenses incurred in connection with the distribution of the service to the bondholders of the principal and interest of the loan, the Hong-Kong and Shanghai Banking Corporation, Tientsin, shall receive from the Railway Administration a commission of ¼ per cent. on the annual loan service, which will be included in the yearly schedule for the same.

9.—The term of the loan shall be forty-five years, and, subject to the modification mentioned hereinafter, repayment of principal shall be made, so far as regards the bondholders, in forty equal annual instalments, commencing with the sixth year.

10.—Interest on the loan shall be charged at the rate of 5 per cent. per annum on the nominal principal, and shall be calculated on the balance of such principal at any time outstanding, payments of interests being made by the Administrator-General in accordance with the amounts and dates specified in the yearly Schedule to be provided.

11.—The loan will be redeemed by annual drawings in London as provided for in the prospectus. Besides the drawings as provided for, the Administrator-General may, on giving three months notice to the Corporation, call for extra drawings to be held for any amount. Bonds so drawn to be redeemed by the Railway Administration at 20 per cent. premium on their par value. Any such extra drawings must take place on the date of the ordinary drawing provided by the prospectus.

In the event of such extra drawings taking place, subsequent payments of interest will be adjusted in the Yearly Schedule to be provided, but the repayments of principal shall continue unaltered in terms of clause 9 of this Agreement until the loan is redeemed.

The Imperial Government of China hereby engages that this loan shall not be redeemed or converted otherwise than as herein provided.

12.—The price agreed upon for this loan is 90 per cent. net of the nominal principal, but should an unfavorable state of the market prevail at the time of issuing the prospectus the Corporation is hereby authorized to reduce the price of the loan, at its own discretion, to not less than 88 per cent. net to the Railway Administration.

13.—The Corporation are hereby authorized to issue to subscribers to the loan bonds for the total amount of the loan in pounds sterling, in such form and for such amounts as shall appear desirable to the Corporation, and the Minister for China in London will seal all such bonds with his official seal, as evidence that the Imperial Government of China is bound thereby. Each such bond shall bear the following clause:—

"The Imperial Government of China, pursuant to an Imperial Edict, dated....., unconditionally guarantees and declares itself responsible for the payment of the principal moneys and interest hereby secured, and in faith thereof it has specially authorized the Chinese Minister in London to seal this bond with his official seal."

14.—All bonds and coupons and payments made and received in connection with this loan shall be exempt from Chinese taxes and imposts for ever.

15.—All details necessary for the prospectus and connected with the service to the bondholders of the interest and repayment of principal of this loan, not herein explicitly provided for, shall be left to the arrangement of the Corporation, who are hereby authorized to issue a prospectus of the loan as soon as possible after the signing of this Agreement.

The Tsung-li Yamen will instruct the Chinese Minister in London to co-operate with the Corporation in any matters requiring conjoint action.

16.—The loan shall be issued to the public as soon as possible after the signing of this Agreement, and shall date from the first day of the month of its issue. Payment of the entire proceeds will be made in London to the order of the Administrator-General not later than the 31st day of March 1899; of the above

proceeds the Corporation will advance to the order of the Administrator-General in London, on or before the 31st day of October next, the sum of £250,000; this advance will bear interest at the rate of 5½ per cent. per annum until such time as the first instalment of the loan proceeds shall be available, when it shall be deducted from those proceeds by the Corporation.

17.—In the event of an unfavorable state of the market rendering the issue of this loan, and the payment of its proceeds to the Railway Administration impossible on the terms named without loss to the Corporation, the Corporation shall be granted such extension of time for the performance of its contract with the Administrator-General as the circumstances demand, any advances or instalments of proceeds already made to the Railway Administration being in that case treated as regards payment of interest, repayment of principal, security, and Imperial Chinese Government guarantee in terms of this present Agreement, and as forming part of the principal amount of this loan. Similar extension of time for the issue of this loan and payment of its proceeds shall also be granted in the event of the Deutsche-Asiatische Bank, Berlin, objecting to its issue before the month of April next, in accordance with the terms of clause 9 of the Agreement for the Chinese Imperial Government 4½ per cent. Sterling Loan of 1898.

18.—Immediately after the signature of this Agreement, and before the issue of the prospectus of the loan to the public, the Administrator-General will memorialise the Throne and obtain an Imperial Edict confirming and sanctioning the provisions of this Agreement, the Imperial Edict so received being then communicated officially and without delay by the Tsung-li Yamen to the British Minister in Peking.

19.—The Corporation may, subject to all its obligations, transfer or delegate all or any of its rights and discretions to any British Company, Directors, or Agents, in consultation with the Administrator-General, with or without power of further transfer and sub-delegation.

20.—This Agreement is executed in quadruplicate in English and Chinese, one copy to be retained by the Administrator-General, one by the Tsung-li Yamen, one by the British Minister in Peking, and one by the Corporation. Should any doubt arise as to the interpretation of the contract, the English text shall be accepted as the standard.

Signed at Peking by the Contracting Parties this 25th day of the eighth month of the twenty-fourth year of the Emperor Kuang-Hsu, being the 10th day of October 1898, Western Calendar.

GREAT BRITAIN AND GERMANY

TIENTSIN-CHINKIANG (NOW NANKING) RAILWAY; PRELIMINARY AGREEMENT.

This Preliminary Agreement relating to the construction of railways between Tientsin and Chinkiang, is made between their Excellencies Hsu and Chang; duly authorized to act on behalf of the Imperial Government of China, hereinafter called "the Imperial Directors" of the one part; and (*a*) the Deutsche-Asiatische-Bank; (*b*) the Hongkong and Shanghai Banking Corporation for themselves and on behalf of Messrs. Jardine, Matheson & Co., as joint agents for the British and Chinese Corporation Limited, hereinafter called "the Syndicate" of the other part.

1. The Imperial Government of China authorizes the Syndicate to issue an Imperial Government 5 per cent. gold loan for an amount of about £7,400,000, this amount being subject to modification later after the completion of survey.

2. The loan is designed to provide the capital for the construction of Government railway lines from a point at or near Tientsin, through Titchow and Tsianfu to Thsien near the southern frontier of Shantung, hereinafter known as the northern part of the Tientsin-Chinkiang Railway lines, and from Thsien to Kuachao (Chinkiang) on the Yangtze Kiang, hereinafter known as the southern part of the Tientsin-Chinkiang Railway lines, the total length of these lines being about 982 kilom., equal to about 1,800 Chinese li.

3. The capital so provided will include the funds required for rolling-stock and other equipment, and for working the lines, together with interest on the loan during the period of construction, which is estimated to occupy about five years from the date of the loan, but which will finally be fixed after survey.

4. The rate of interest for the loan shall be 5 per cent. per annum on the nominal principal, and shall be paid during the time to be fixed for the construction out of the proceeds of the loan, and afterwards out of the revenue of the lines named, in half-yearly instalments, according to the amounts and dates of a schedule which will be attached to the Final Agreement.

5. The term of the loan shall be fifty years. Repayment of principal shall commence in the eleventh year from the date of the loan, and shall be made by a yearly sinking fund in shares to be determined in the Final Agreement to the Deutsche-Asiatische Bank, and the Hongkong and Shanghai Banking Corporation in yearly instalments out of the revenue of the lines according to the amounts and dates of the schedule to be attached to the Final Agreement.

6. In the event of the Imperial Government of China wishing to redeem, after the lapse of thirty years from the date of the loan, the outstanding amount of the loan, or any portion of it not yet due, from funds *bona fide* belonging to the Chinese Government or subscribed by Chinese merchants, the conditions for such redemption must first be arranged with the Syndicate when the time arrives.

7. The yearly payments due for amortization and the half-yearly payments due for interest, except as otherwise provided in Clause 4, shall be made in accordance with the amounts and dates of a schedule to be attached to the Final Agreement, in shares to be determined by the Final Agreement, out of the joint net revenues of the railway lines to the Deutsche-Asiatische Bank and the Hongkong and Shanghai Banking Corporation by the Boards of Commissioners hereinafter mentioned, who shall hand to those banks, at their branches in Shanghai, twenty-one days before the due date named in the schedule, funds in Shanghai sycee sufficient to meet such payment in sterling in Europe, the rate of exchange for which shall be settled with those two banks on the same day on a fair basis.

In reimbursement of expenses connected with the service of interest and principal of the loan, the two banks will receive a commission of ¼ per cent. on the annual loan service.

8. The Imperial Government of China hereby engages that the interest and principal of this loan shall duly be paid in full, and should the revenues of the railways not be sufficient to provide for the due and full payment of interest and repayment of principal of this loan the Imperial Directors must memorialize the Throne, and the Imperial Government of China will then make arrangements to ensure that the amount of deficiency shall be met from other sources and handed over to the banks twenty-one days before the due date of the funds required to complete full payment of interest and repayment of principal.

This clause to be open to reconsideration in the Final Agreement.

9. This entire loan shall be secured by a first mortgage on the permanent way, rolling-stock, and entire property, together with the revenue of the lines named in Clause 2. No further loan, charge, or mortgage shall be charged on this security, except with the written consent of the two banks, until the present loan is returned. In the event of default in payment of interest or repayment of principal of this loan on due date the railway lines and property so mortgaged shall be handed over to the Syndicate, to be dealt with in such a manner as may be legal and necessary for the full and effective protection of the bondholders. When the loan is completely redeemed, Clause 29 of this Agreement shall take effect.

10. The Syndicate will be authorized to issue to the subscribers to the loan, bonds for the total amount of the loan in pounds sterling in such form, in such languages, and for such amounts as shall appear advisable to the Syndicate, and these bonds shall be sealed in China by the Imperial Directors and in Europe by the Minister for China, in Berlin or London, as evidence that the Imperial Government of China is bound thereby as debtor of the loan. Provision will be made in the Final Agreement for the case of bonds lost, stolen, or destroyed.

11. All bonds and coupons and payments made and received in connection with the service of this loan shall be exempt from all Chinese taxes and imports for ever.

12. All details necessary for the prospectus and connected with the service of the interest and repayment of the principal of this loan, not explicitly provided for by the Final Agreement, shall be left to the arrangement of the Syndicate, who will be authorized to issue a prospectus of the loan as soon as possible after the signing of the Final Agreement.

The Imperial Government of China will instruct the Chinese Ministers in Berlin and London to co-operate with the representatives of the Syndicate in any matters requiring conjoint action, and the Chinese Minister in Berlin will sign the prospectus of the loan as required by the Rules of the Berlin Stock Exchange.

13. The loan shall be floated in one or more series at the discretion of the Syndicate, due regard being had to the interest of China; but the floating of the loan shall not be delayed more than necessary, subscriptions being invited by the Syndicate in Europe and in China from both European and Chinese on equal conditions.

14. The price of the loan shall be 90 per cent. net on the nominal principal to the Chinese Government. The proceeds of the loan shall be paid to the credit of a Tientsin-Chinkiang Imperial Government Railway account with the Hongkong and Shanghai Banking Corporation, London. The payment into the credit of these accounts shall be made in such instalments and on such dates as the conditions allowed to the subscribers to the loan shall admit.

Interest at a rate to be arranged from time to time shall be granted on the credit balance of the railway accounts.

After deduction of the funds required for the service of interest and for commission on this service during the time of construction, the Deutsche-Asiatische Bank will hold the proceeds with accrued interest to the order of the Board of Commissioners appointed for the northern part of the Tientsin-Chinkiang Railway lines, and the Hongkong and Shanghai Banking Corporation will hold the proceeds with accrued interest to the order of the Board of Commissioners appointed for the southern part of the Tientsin-Chinkiang Railway lines. The Commissioners, in drawing the sums necessary for the construction, shall give notice to the banks fourteen days before the day on which they are required.

15. If during the time of construction the whole amount of the instalments with accrued interest to be paid by the Syndicate should, after deduction of the sums necessary for the service of interest on the loan, not be sufficient for the construction of the railway lines, the amount of deficiency shall be provided by a supplementary loan to be issued by the Syndicate, the interest and other conditions of which are to be the same as in this Agreement, but the price must be arranged when the time arrives.

If after the completion of the lines there should be a balance at credit of the Tientsin-Chinkiang Railway account, the Syndicate shall transfer such unused balance to the credit

of the loan service reserve fund, hereinafter mentioned as a provision for payments to which the Government is bound by Clause 8 of this Agreement.

16. If before the publication of the prospectus for the issue of the loan any political or financial crisis should take place in Europe or elsewhere, by which the markets and the prices of existing Chinese Government stocks are so affected as to render the successful issue of the loan impossible on the terms herein named, the Syndicate shall be granted such extension of time for the performance of their contract as the circumstances demand, or shall have the right to withdraw from their contract with the Chinese Imperial Government, which shall in that case become null and void.

17. The Deutsche-Asiatische Bank on the one side, and the Hongkong and Shanghai Banking Corporation for themselves, and on behalf of Messrs. Jardine, Matheson & Co., as joint agents for the British and Chinese Corporation Limited, on the other side, shall take the loan in shares to be agreed upon by the Syndicate, and without responsibility for each other.

18. The northern part of the railway lines shall be constructed, equipped, and worked on behalf of the Imperial Chinese Government by the Deutsche-Asiatische Bank, and the southern part of the railway lines shall be constructed, equipped, and worked on behalf of the Imperial Chinese Government by the British and Chinese Corporation Limited, under conditions as follows:—For each of these parts a Board of Commissioners shall be appointed to superintend the construction, equipment, and working of the railway lines in accordance with regulations to be arranged between the Imperial Directors and the Deutsche-Asiatische Bank and the British and Chinese Corporation Limited.

19. An office shall be provided for the Imperial Directorate, and a head office shall be established for each Board of Commissioners. The Board of Commissioners for the northern and southern parts of the lines respectively, appointed to superintend the construction and administration, shall each consist of five members, two Chinese managers representing the Imperial Directors and nominated by them, and three European members, namely, a representative of the Bank concerned, the manager and the Chief Engineer, to be nominated by the Deutsche-Asiatische Bank, and the British and Chinese Corporation Limited.

In case any foreign or Chinese members of the Boards of Commissioners do not work well together, it shall be open to the Imperial Directors, the Deutsche-Asiatische Bank, and the British and Chinese Corporation Limited, to mutually discuss means to arrange and deal with the matter.

The foreign and Chinese railway staff, including a Ti-tiao, shall be appointed by the Boards of Commissioners, who will report the appointment to the Imperial Directors. In the event of an important appointment the two Chinese members of the Boards may first consult the Imperial Directors.

The principal members of the railway staff shall be capable and experienced Europeans, but Chinese with sufficient experience in engineering or traffic may also be appointed.

Foreign and Chinese members of the railway staff shall, in the event of incapacity or misconduct, be dismissed by the Boards of Commissioners, who will inform the Imperial Directors of the same.

The salaries of the five members of each Board of Commissioners and of the foreign and Chinese railway staff shall be arranged by the Deutsche-Asiatische Bank, the British and Chinese Corporation Limited, and the Imperial Directors, and paid by the head office of their respective sections.

20. The plans, estimates, and all matters relating to survey must be submitted for approbation to the Board of Commissioners. The Chief Engineer shall indicate to the Chinese Commissioners the land which it is necessary to purchase, and which must be sufficient for the construction of a permanent way with double lines and dependencies, and the Chinese Commissioners shall thereupon effect such purchases at a price to be based on a scale to be arranged after survey. In the event of the route proposed by the Chief Engineer passing through towns, villages, graveyards, or other points where much obstruction is encountered, the Chief Engineer will, together with the Board of Commissioners, consider means of diverting the proposed railway route in order to avoid difficulties.

21. After completion of the survey and due inquiry as to the prevailing provincial likin and customs dues, the Imperial Directors will arrange with the Deutsche-Asiatische Bank and the British and Chinese Corporation Limited, regulations for the payment of likin and duty upon merchandise and live stock in transit over the railway lines.

22. All materials necessary for the construction and working of the lines, obtained either from foreign countries or from other provinces of China, and the revenues derived from the railway, shall be exempt from duty or taxation of all kinds, and the Imperial Government of China will instruct the customs and likin authorities accordingly.

All material, plant, and goods shall be ordered from the Deutsche-Asiatische Bank and the British and Chinese Corporation Limited, on conditions to be arranged in the Final Agreement.

The plans, estimates, and requisitions for materials shall be submitted to the Board of Commissioners by the Chief Engineer for reference at their discretion to the Imperial Directors, and the same shall be furnished by the Deutsche-Asiatische Bank and the British and Chinese Corporation on the best possible terms.

Due consideration will be extended to materials from the Hanyang Iron Works, if available when required, and of a quality satisfactory to the Chief Engineers of the Syndicate.

23. The Deutsche-Asiatische Bank and the British and Chinese Corporation Limited shall, during the working of the lines, maintain the railways, buildings, works, rolling-stock and dependencies in good order and condition.

24. Branch lines or extensions in connection with the Tientsin-Chinkiang Railway lines that may appear profitable or necessary later on shall be the subject of negotiations between the Imperial Directors and the Syndicate.

25. The tariff to be introduced by the European Manager shall be approved by the Boards of Commissioners, who will take into consideration the tariffs of other existing railway lines in China, while keeping in view the necessity for attracting traffic. The European Manager may also be instructed to enter into arrangements for tariffs on through traffic connecting lines. In case of war, foreign or internal, the railway lines shall be reserved in the first instance for the transport of Chinese troops, commissariat, and munitions of war under the order of Imperial Directors, and at half the ordinary tariff rates, and the railways shall not engage in any service injurious to China. In case of famine, grain will also be transported over the lines at half the ordinary tariff rate, under orders of the Imperial Directors.

26. All payments made and received in connection with the railway lines will be subject to the control of the Boards of Commissioners, and after the line is working estimates of receipts and expenditure shall be similarly submitted to the Boards. Regular accounts shall be furnished through the Imperial Directors to the Railway and Mining Bureau of the Tsung-li Yamen and the Board of Revenue, Peking. All payments made must be represented by Chinese or foreign vouchers as the case may be.

27. The profits from working completed sections of the railways during the time of construction shall be credited to railway construction account.

28. Should any traffic business be apparent later on as likely to benefit the Imperial Government of China and increase the earning power of the railway lines, the Deutsche-Asiatische Bank and the British and Chinese Corporation Limited shall represent the same to the Imperial Directors, and request them to obtain the necessary authority to arrange the business

29. The Deutsche-Asiatische Bank and the British and Chinese Corporation Limited shall work the lines on behalf of the Imperial Government of China until the present loan is redeemed. As soon as the loan has been completely redeemed this Agreement shall become null and void, and the railway lines and property named in this Agreement shall be handed over to the absolute disposal of the Chinese Government.

30. The annual net revenue is understood to be that resulting from the gross receipts of the passengers and goods traffic and the income from other sources, after deducting all working expenses, including maintenance of the permanent way, repairs and renovation of machinery and rolling-stock, and all expenses of administration, besides deducting an amount to be determined by the Deutsche-Asiatische Bank and the British and Chinese Corporation Limited as sufficient for accumulating a reserve fund for extraordinary improvements or repairs. Of the surplus of the joint net annual revenue of the northern and southern railway lines, after payment of interest and repayment of principal of the loan, first, a participation of 20 per cent. will be granted to the Syndicate in remuneration for their management of the construction and the working of the railway lines; secondly, an amount equal to 10 per cent. of the gross earnings will be transferred to a loan service reserve fund, deposited with the two banks, and the remainder will be at the disposal of the Imperial Government of China. An account of the said loan service reserve fund will be rendered yearly to the Railway and Mining Bureau of the Tsung-li Yamen and to the Board of Revenue, and the fund will be drawn upon only in the case of the revenue of the railway lines being insufficient to meet the service of interest and principal of the loan. On redemption of the loan being completed the balance of this fund will revert to the Chinese Government.

31. The powers and authority given and delegated to the Imperial Directors by the Imperial Government of China shall, in the case of their promotion or removal, be transferred to their successors, and the Deutsche-Asiatische Bank and the Hongkong and Shanghai Banking Corporation, Messrs. Jardine, Matheson & Co., and the British and Chinese Corporation Limited, may, subject to all their obligations, transfer or delegate all or any of their rights, powers, and discretions to any German or English Company, directors, or agents, with or without power of further transfer and sub-delegation.

32. Differences arising between the Imperial Directors and the Syndicate will be taken up and decided with equity and justice by the Tsung-li Yamen on the one side, and the Minister for Germany and the Minister for Great Britain in China on the other side.

33. As soon as possible after the signature of this Agreement the Engineers of the Syndicate will be authorized by the Imperial Chinese Government to survey and report upon the proposed railway lines, when, subject to such report being satisfactory to the Syndicate, this Preliminary Agreement will be ratified by the Syndicate and replaced by a Final Agreement containing all necessary details. Modifications in the conditions of this Preliminary Agreement may be made, subject to the consent of both parties.

34. The provisions of this Preliminary Agreement shall, immediately after signature, be ratified by an Imperial Edict (*) which shall be communicated by the Tsung-li Yamen to the Ministers for Germany and Great Britain in Peking.

35. Five sets of this Agreement are executed in English and Chinese, one set to be retained by the Tsung-li Yamen, one by the Railway and Mining Bureau, and one by each Contracting Party.

In the event of any doubt arising regarding the interpretation of the Contract, the English text shall rule.

(*) The Edict was issued on the 24th May, 1899; vide Blue Book, China, No. 1 of 1900, p. 190.

THE TIENTSIN-PUKOW RAILWAY LOAN AGREEMENT.

The following is a translation of the Agreement between the British and Chinese Corporation Ltd. and the Wai Wu Pu signed in Peking on Jan. 13, 1908, or the tenth day, twelfth moon, thirty-third year of Kwang Hsu:—

1.—The Chinese Government hereby sanctions the German and British Banks Syndicate issuing a loan for five million sterling, £5,000,000, at 5% which shall be styled the "Chinese Government five per cent Tientsin-Pukow railway loan."

2.—This loan is to furnish the capital wherewith to construct a Government railway from the vicinity of Tientsin to connect the existing Peking-Shanhaikwan line via Techow, Chinanfu to Ihsien along the southern boundary of Shantung, and this line will hereafter be known as the northern section of the Tsin-Pu or Tientsin-Pukow line; and from Ihsien to Pukow on the bank of the Yangtze opposite Nanking which shall hereafter be known as the southern section of the Tsin-Pu railway. The total distance of the two sections is 1085 kilometers or equal to 2170 Chinese li. The survey of the line will be subject to revision by the Director General.

3.—The capital will be used for the construction of the line, the purchase of the land and rolling stock, and to meet the current working expenses of the line when in operation, also the payment of the interest on the loan while the line is being constructed. The period of construction calculating from the date of commencement is estimated as four years, such commencement to take place within six months of the signing of the agreement, and within this period the syndicate shall place £500,000 at the disposal of the Director General, the money to be drawn by him either in China or from Europe as a first instalment of the loan. The whole or part of this £500,000 shall be deducted with interest from the proceeds of the first sale of the bonds and bear interest not exceeding 6%.

4.—The interest of the loan, which is 5%, shall be payable from the date of issue of the loan and during the time of construction, payable half-yearly. It will be paid by the Chinese Government either from the proceeds of the loan or from other sources as considered advisable.

5.—The loan is made for a term of 30 years, the repayment to commence at the end of ten years, and with the exceptions noted in Art. 6 of this agreement the amortisation to the banks concerned, Deutsch Asiatische Bank, and Hongkong and Shanghai Banking Corporation, Ltd., shall be made in half-yearly instalments out of the revenue of the line or from such other source as the Chinese Government may decide, payment being made in all cases 14 days previous to the date due calculated from the date of issue.

6.—After the expiration of ten years the Chinese Government may if it so desire redeem the outstanding amount of the loan or any part of it any time before the twentieth year on the payment of a premium of 2½%, or £102 10s. on every £100 bond. After the twentieth year redemption can be made without premium, but in any case six months' notice must be given by the Chinese Government, and the method of redemption shall be by the drawing of additional bonds at each ordinary drawing.

7.—The Deutsch Asiatische Bank and the Hongkong and Shanghai Banking Corporation having been appointed representatives for the loan by the British and German companies to receive the half-yearly payments due for amortisation and interest, referred to in Articles 4 and 5, they shall be made, in accordance with the amounts and dates attached to this agreement by the Director General of the Railway, in Shanghai or in Tientsin, in Shanghai or Tientsin Sycee sufficient to meet such payments in gold in Europe, exchange for which shall be settled with the said Banks on the same day. The railway administration may arrange exchange within six months previous to any due date for the repayment of interest and principal. Payment can be made in gold if the Chinese Government have gold funds in Europe, not remitted from China for the purpose, and desire so to use them.

The Hongkong and Shanghai Banking Corporation and Deutsch Asiatische Bank will receive a commission of one quarter per cent for their expenses as Agents.

8.—The Imperial Government of China engages that the interest and principal of this loan shall duly be paid in full, and if the revenue of the Railway or the proceeds of the loan do not suffice for full payment, the Director General shall memorialise the Throne on the amount of deficiency and make payment to the Banks on the date upon which funds are required.

9.—The loan is secured in the following manner:—

1. By lekin and internal revenues of the province of Chihli, 1,200,000 Haikuan Taels a year:

2. By lekin and internal revenues of the province of Shantung 1,600,000 Haikuan Taels a year, and

3. By the revenue of the Nanking Lekin Collectorate 900,000 Haikuan Taels a year and of the Huai-an Native Customs 100,000 Haikuan Taels a year in the province of Kiangsu.

The provincial revenues as above are declared free from all other loans, charges or mortgages.

So long as principal and interest of the loan are regularly paid, there shall be no interference with these provincial revenues. If principal or interest of the loan be in default at due date, then, after a reasonable postponement internal revenues of the three provinces sufficient to provide the amounts above stated shall forthwith be transferred to, and be administered by, the Imperial Maritime Customs, in the interest of the bondholders. And so long as this loan or any part thereof shall remain unredeemed, it shall have first claim over all future loans, on the above mentioned revenues of the three provinces. It is understood and agreed that so long as this loan is unredeemed the Railway shall under no circumstances be mortgaged nor its earnings given as security to any other object.

Should the Government decide to revise the Customs tariff with the view of abolishing likin, this agreement will not oppose such revision except that the likin required as security for the loan must not be decreased or abolished without previous arrangement with the Syndicate and after other source of revenue has been guaranteed.

10.—The Syndicate is authorized to issue bonds for the total amount of the loan and the form of the bonds shall be arranged in consultation with the Director General or the Chinese Ministers in London and Berlin. The bonds shall be printed in Chinese and English or Chinese and German and be signed by stamp of the Director General and his seal, the Chinese Minister in London or Berlin shall also put his seal upon each bond with his signature, as a proof that the sale of the bonds is authorized by, and is binding upon the Chinese Government. The representatives of the Syndicate in London and Berlin shall countersign the bonds as agents.

In the event of bonds being lost, or destroyed, the Syndicate shall notify the Director General and the Chinese Minister in London and Berlin, who shall authorize the Syndicate to insert an advertisement in the public newspapers notifying that payment of the same has been stopped according to the customs of the country concerned, and if the bonds are not recovered, the Director General, or the Chinese Minister in London or Berlin, shall issue duplicate bonds.

11.—All bonds and payments made and received in connection with the service of this loan shall be exempt from all Chinese taxes and imposts during the currency of this loan.

12.—The Syndicate is authorized to issue the regulations of the loan as soon as possible after the signing of this agreement, and the Chinese Government will instruct the Chinese Ministers in London and Berlin to assist the Syndicate in any matters connected therewith and to sign the regulations of the loan.

13.—The loan will be issued in two or more instalments of bonds, the first issue of £3,000,000, as soon as possible after the signing of this agreement and not later than twelve months from the date. The price to the Imperial Chinese Government of the first instalment shall be ninety three per cent of the face value. Further issues shall be effected in time to prevent any delay of the work of construction, in amounts to be determined by the Director General, and the price payable to the Chinese Government in respect of these series shall be the same rate as to the public, less charges of 5½ points by the Syndicate. Subscriptions will be invited by the Syndicate in Europe and in China both from Chinese and Europeans on equal conditions, preference being given to the application of the Chinese Government if application is made before the issue of the regulations.

14.—The income of the loan shall be paid to the account of Tientsin-Pukow Government Railway with the Hongkong and Shanghai Banking Corporation and the Deutsch Asiatische Bank in China, London or Berlin, as the case may be. Interest at the rate of 4% shall be granted on the portion of this account kept in London and Berlin, and interest on the portion kept in China will be allowed at the Banks' rates for current account or fixed deposits, as may be arranged. In addition to interest and commission the Banks will hold the funds for the Director General, who shall not draw more than £20,000 without giving the Banks ten days notice. Expenditure of funds shall be in amounts to suit the progress of construction of the railway by orders on the Hongkong and Shanghai Banking Corporation and the Deutsch Asiatische Bank respectively, signed by the Managing Director of the Railway or, in his absence, by his representative, and accompanied by his certificates stating the nature and cost of the work to be paid for.

Such amounts as may be required in China may at any time be transferred by the Managing Director, at his discretion, to Shanghai, the transfers being effected through the Hongkong and Shanghai Banking Corporation and the Deutsch Asiatische Bank respectively, and the transferred funds shall remain on deposit with those Banks until required for Railway purposes.

The accounts of the Railway will be kept in Chinese and English in accordance with modern methods, and will be supported by all necessary vouchers. During the period of construction the accounts will be open at any time to an inspector appointed and paid by the Syndicate. His duty will be to certify the due expenditure of the funds in accordance with the provisions of Article 3 of this Agreement. The Railway Administration will publish annually at the end of the financial year a report in Chinese and English of the working accounts and receipts of the railway, which report may be purchased by the public on application.

15.—If during the time of construction the proceeds of the present loan should not be sufficient to complete the construction and equipment of the line, the deficiency shall be provided, in the first place, from such Chinese funds as may be available so as to permit continuance of the work, any balance then uncovered being supplemented by a further foreign loan for the amount required, to be issued by the Syndicate. The interest and other conditions of such supplementary loan will be the same as in the present agreement. If after the completion of the line there should be a balance at credit of the railway account, such unused balance will be transferred to the credit of the interest reserve fund mentioned in Article 21 as a provision for payments for which the Imperial Chinese Government is responsible under this agreement.

16.—If, before the first sale of the bonds, any political or financial event should take place causing the prices of Government stocks to fall so as to make the successful issue of the loan impossible on the terms named, the Syndicate shall be granted further extension of time, but not beyond eighteen months from the date of this agreement. If within this time limit the first bonds have not been issued, then this contract shall become null and the money paid by the Syndicate under the provisions of Article 3 shall be by the Chinese Government with interest, but without any

other compensation or remuneration whatsoever.

17.—The construction and control of the railway will be entirely in the hands of the Imperial Chinese Government. For the work of the northern and southern sections respectively the Chinese Government will select and appoint fully qualified German and British Chief Engineers, acceptable to the Syndicate. These two Chief Engineers shall be under the orders of the Managing Director, or his duly authorized representative, and will carry out all the wishes of the Railway Administration with regard to the plan and construction of the line. They must pay all due respect to the Director General and the Managing Director. The terms of their respective agreements will be arranged by the Director General on his sole authority.

On the completion of the line the Imperial Chinese Government will administer both sections as one undivided Government Railway and will appoint an Engineer-in-Chief, who during the period of the loan shall be a European, without reference to the Syndicate.

18.—For all important purchases of railway materials tenders shall be called for by the Managing Director; and the Banks and Syndicate as Agents shall purchase the materials required on the terms most advantageous to the Railway, and shall charge the original cost of same with a commission of five per cent. It is understood that no orders for materials shall be executed or any expenditure incurred without due authorization by the Managing Director.

The Railway Administration shall have the right to reject on arrival in China materials which do not come up to specifications. At equal rates and qualities goods of German and British manufacture shall be given preference over other goods of foreign origin for the northern and southern sections respectively. The Railway Administration reserves the right, while paying the above stipulated commission to the said Agents in respect of all purchases of foreign materials, to avail itself of the services of other Agents in China or abroad should it see fit to do so.

No commission shall be paid to the Agents except as above provided; but it is understood that the Railway Administration shall provide out of Railway funds for the remuneration of Consulting Engineers whenever their services are engaged.

With a view to the encouragement of Chinese industries, preference will be given, at equal prices and qualities, over British, German or other foreign goods to Chinese materials, and goods manufactured in China. No commission will be paid on purchases of such materials and goods.

19.—Branch lines in connection with the railway line mentioned in this Agreement may be built by the Imperial Chinese Government with funds at their disposal from Chinese sources, if thought advisable, and if foreign capital is required preference will be given to the Syndicate.

20.—The Syndicate is granted the right to retain two hundred thousand pounds sterling (£200,000) out of the first issue of the bonds instead of 20% of the profits of the railway as first proposed. No further payment in respect of profits will be allowed on any subsequent series of the loan, or on any supplementary loan.

21.—After payment of interest and repayment of principal of the loan for any year, the Railway Administration will deposit with the Deutsch Asiatische Bank and the Hongkong and Shanghai Banking Corporation in Shanghai or Tientsin any surplus revenue of the railway line for that year up to the amount required to pay the following year's instalments of interest on the loan; the rate of interest on the deposit being arranged with the Banks from time to time with due regard to the conditions of the market.

22.—The Deutsch Asiatische Bank and the Syndicate may transfer or delegate all or any of their rights, powers, and discretions thereunder to any German or British Company, Directors or Agents with power of further transfer subject to the approval of the Director General.

23.—This Agreement is signed under authority of an Imperial Edict dated the tenth day of the Twelfth Moon of the 33rd year of Kuang Hsu, corresponding to the 13th day of January one thousand nine hundred and eight, Western Calendar, which has been officially communicated to the Ministers of Great Britain and Germany in Peking by the Wai Wu Pu.

24.—Five sets of this Agreement are executed in English and Chinese, three sets to be retained by the Imperial Chinese Government and two by the Syndicate. In any case of dispute the English text will be taken as correct.

GERMANY-CHINA

REGULATIONS FOR THE KIAO-CHAO AND TSINANFU RAILWAY. SIGNED MARCH 21, 1900. (TRANSLATED FROM CHINESE.)

ARTICLE 1. According to the second clause in the Second Section of the German-Chinese Convention after the Tsaochou Mission Affair, the building of a railway line from Kaiochou to Tsinanfu by a Chino-German Company is sanctioned, and in this Company, both German and Chinese subjects shall be at liberty to invest money.

At first, the management of this Company shall rest with the Germans, temporarily. A report of the shares taken up by the Chinese shall be made every six months to the Shantung Bureau of Foreign Affairs, and as soon as these shares shall exceed the amount of Tls. 100,000, the Governor of Shantung shall appoint a satisfactory official to become a member of the company and assist in clearly defining the regulations.

ART. 2. If said Company shall hereafter establish any branch office within the Province of Shantung, this Province will then appoint a satisfactory Chinese official for said branch office to assist in matters of consultation and operation.

ART. 3. The Governor of Shantung shall appoint a special official to assist in the locating of the railway; the high local officials or prominent gentry of various places will also be invited to assist. This will be done in order that the conditions of the various places may receive no injury. But as to scientific questions, these shall all be settled by the Engineer, and in all matters relating to the buying of land, the specially appointed official must be consulted. When the route has been investigated, the Company must prepare a map of the line showing all the conditions, the scale to be 25,000 to 1, which map is to be handed in to the Governor of Shantung, after which the matter of buying the land will be considered, and as soon as the land is all purchased, the work on the construction can begin. But as to the buying of the land, this matter must be managed as heretofore, with uniform promptness and peacefulness, that the owners of land may have no excuse for putting obstacles in the way, which would result in delaying the work. The Company will be permitted to buy only so much land as is actually needed in the construction of the railway, including what will afterwards be needed for the operation of the line. For small car-housing stations, it will be permitted to buy a piece of land about 630 metres long (1 meter = 2 ft. 9.6 in. official measure, and 1 ft. official measure = 338 millimeters), and about 70 metres wide. For large car-housing stations it will be permitted to buy a piece of land about 730 metres long and about 100 metres wide. For railway stations of medium size a piece of land 850 metres long and 130 metres wide can be bought adjoining the walls (of the cities). For large railway stations the amount of land that can be bought will depend upon the special conditions of the case, except only that the necessary amount shall be the limit. When it is necessary, however, to buy earth to use in making fills or elevations, it will not be understood that this must all come from within the limits set down above.

ART. 4. In the construction of the line, whenever the Company finds a place upon its land where a space should be left for water to flow—whether a bridge should be built or a sluice opened—they must leave satisfactory space for the flow, in order that no harm or hindrance shall come to the populace or their fields.

ART. 5. The railroads must not injure or obstruct any city walls or public works with the Province, nor any important strategical positions that may be used for protection.

ART. 6. In constructing the railway, the Company must go around small villages and market towns, also ancestral halls, temples, grave-yards, dwellings, and water-ways, orchards and vegetable gardens. These must not be made to suffer on account of the railway. And as for specially large and well arranged grave yards, these must receive special regard. In cases where it is impossible to avoid them, the matter should be thoroughly looked into and discussed by both parties, and the high local officials must be requested to give two months' notice to the owner of the property, that he may construct a new grave yard at another place modeled after the original one. Any person in such a case, moreover, must not be subjected to any financial loss.

ART. 7. In buying land the Company must use the Chinese units "kung" and "ch'ih" for measuring, one "kung" equalling five "ch'ih." (1 ch'ih = 338 millimeters, and in any locality one "mu" = 360 "kung" or 9000 square "ch'ih"). The Provincial Treasurer will furnish standard lengths for the "kung" and "ch'ih," that both parties may be guided by them. As to the Government tax, that matter will be dealt with in the same manner as is done in other parts of China where foreigners have bought land for the construction of railways.

ART. 8. In transporting materials and men for the measurement and survey of the land, the Company must keep off of the fields and vegetable gardens of the people, and in case where real damage has been done by trampling on the fields, and action therefor is brought, the Company will be required by the local high officials to make good the loss, out of pity for the abused party.

ART. 9. Whenever the local officials are requested to appoint someone to assist the company, said company must provide such person with money for meals; and this money must be kept in an entirely different account from that in which the money is kept for the purchase of land from the owners. The latter should be handed over to the local officials, to be received by them and handed over in turn to the owners. At the same time the local officials must send the Company a certificate of purchase for the land.

ART. 10. If the Company desires to rent any buildings or rooms along the line of the railway, they must first notify the high local officials, whereupon the said officials will consult with the owners and draw up a contract for the rent on behalf of the Company.

ART. 11. All materials necessary for the construction of the railroad must be bought at the market price, and a fair price given therefor; or else the local officials may be requested to buy them for the Company.

ART. 12. All silver and other money used by the Company must be exchanged justly at the rate of the place at the time.

ART. 13. The Company will not be permitted to act upon its off from the main line to connect with the mines, for the purpose of bringing down rock, lime, etc., such, for example, as the branch line at Poashan Hsien connecting with the main line—such roads will not come under this prohibition. But whenever it is desired to build one of these short branch lines, permission must first be requested from the Governor of Shantung, that he may investigate the matter.

ART. 14. All section men appointed by the Company within the limits of Shantung Province must be provided with passports sealed by the officials of both countries. This is to assist the local officials in giving protection. Without such passport they can not assume the responsibility of protection.

ART. 15. All Chinese or Germans employed by the Company must be supplied with special certificates to that effect; sealed both by the local officials and the Company. This will facilitate the detection of imposters, when the road is being laid out, as well as when it is being constructed, it will be the duty of the Chinese officials to appoint men section by section, to accompany and assist (the railway employés) in looking after their things—such as wooden stakes, etc. Should any falsely assert himself to be in the employ of the Company, he shall be arrested and punished by the local officials.

ART. 16. Should it ever happen that it becomes necessary for soldiers to protect the railway outside of the 100 li zone (Kiao-chow concession) the Governor of Shantung shall detail such soldiers, and foreign soldiers can not be used. The Governor of Shantung having consented to use his utmost endeavors to protect the railway both in time of construction and operation, he must see to it that the railway receive no injury from bandits.

ART. 17. The object of constructing this line is solely the development of commerce, and it will not be permissible to transport foreign soldiers or munitions used by foreign soldiers to any place outside of the 100 li zone. If by any chance, the peaceful relations existing between China and any foreign Power become broken, the railway will still remain under the management of the Company, but the company must still observe the above rule. But if the offices are seized by an enemy, and the Company loses its control, then this Province will no longer assume the responsibility of protecting the line.

ART. 18. Should the Province be visited by famine or flood, so that it is necessary to send relief to the sufferers in the form of rice or clothes; or should there be any riot necessitating the use of soldiers, such soldiers (with their arms, provisions, and baggage) and such relief (as mentioned above) must be shipped at reduced rates according to such regulations as Germany has in her own country.

ART. 19. The Company must make satisfactory arrangement for the easy collection and receipt along its line, if such likin and Customs duties as are collectible in the Province on merchandise and domestic animals. As to the erection of Custom Houses, etc., the Customs officials of this Province will first discuss with the Company the amount to be expended, after which that matter will be taken up.

ART. 20. In the construction of the railway, the Company must employ among their men, people who live in the various villages along the line; and the Company shall also trade with them, that they may not be left out in the cold as it were.

ART. 21. All Chinese employed by the Company outside the German concession shall, if they break the law, be tried by the high local officials; and when a local official notifies the Company that according to Chinese law, a certain man should be tried as an offender, said offender shall not be given improper protection, or be in any way screened by the Company. If there be any offenders or law-breakers among the foreigners employed, and action be brought against them, they shall be tried by foreign law, and it will be the duty of the Company to make a thorough investigation of the case, and not show undue favor.

ART. 22. Competent men must be picked for work on the road, and natives of the place must be used as far as possible. Moreover, the price to be paid for labor must depend upon the various conditions of the place. If the laborers get into quarrels with the people, it will be the duty of the Chinese officials to arrest them and deal with them according to the law.

ART. 23. After the completion of the road, special men shall be detailed to watch and repair the line. Old residents in the various respective districts—men who have considerable means—shall be intrusted with the hiring of these men, in order to guarantee that the men who are hired will all be peaceful and reliable characters. Moreover, those who are intrusted with the hiring of the men must obtain from the local officials certificates for the men they hire. This is for convenience in investigation.

ART. 24. After all work in connection with the railway is completed and the road is being operated according to regulation, should there be any accident resulting in the injuring of any Chinese or damaging their property, the Company must repay them for their losses according to the conditions. At all times notices must be conspicuously placed. Damages must be paid also for all losses or injury to life or property caused by error or carelessness in the handling of the trains. Before the road is entirely completed, and when trains are running according to temporary schedule, this rule that damages must be paid for all losses or injury to life and property caused by error or carelessness in the handling of the trains, likewise holds good.

ART. 25. If there ever be any dangerous places in this province, such as flooded districts, fallen trestles, or damaged bridges, interfering with the operation of the railway, then these obstructions must be removed before the road can be operated again according to regulation.

ART. 26. If at any time, whether it be when the road is being located, constructed, or operated, the Company for some reason requests the Governor of Shantung to furnish soldiers for protection, it shall be his duty to investigate the matter immediately and grant the request, sending sufficient guard of soldiers to the place where they are needed. As to the amount of extra money which the Company shall pay such guards, this will be considered apart.

ART. 27. The title of and authority over all railroad lands outside the German concession, so far as they rested in the former owner originally, will revert from him to the Governor of Shantung. Title to, and authority over, the railroad lands within the German concession will revert to the German Governor.

ART. 28. The Chinese Government shall have the right to buy back this railroad in the future, but as to this matter, it will be considered separately later.

After the above articles have been adopted, signed, and sealed, they shall be sent to the Department and District officials, as well as to the various railway officials, that all may become familiar with them and act accordingly. Hereafter, if any alterations or additions are deemed necessary, they can be made only by consultation of the Governor of Shantung, or such competent and experienced officer as he may appoint, and the Company.

(Sgd.) YIN-CH'ANG,
Manager of Railway and Mining Affairs, etc., etc., etc.

YUAN (SHIH-K'AI),
Vice-President Board of War, Governor of Shantung, etc., etc., etc.

Kuanghsu, XXVIth Year, Second Moon, 21st Day. March 21st, 1900.

(Signed on the part of the Chino-German Co. by Schmidt and Michaelis.)

AGREEMENT BETWEEN CHINA AND GERMANY IN REGARD TO THE RAILWAY AND MINING CONCESSION IN SHANTUNG.

I. The Chinese Government sanctions the construction by Germany of two lines of railway in Shantung. The first will run from Kiaochow and Tsinan-fu to the boundary of Shantung province via Wei-hsien, Tsinchow, Pashan, Tsechuen, and Suiping. The second line will connect Kiaochow with Chinchow whence an extension will be constructed to Tsinan through Laiwu-hsien. The construction of this extension shall not be begun until the first part of the line, the main line, is completed, in order to give the Chinese an opportunity of connecting this line in the most advantageous manner with their own railway system. What places the line from Tsinan-fu to the provincial boundary shall take in *en route* is to be determined hereafter.

II. In order to carry out the above-mentioned railway work a Chino-German Company shall be formed, with branches at whatever places may be necessary, and in this company both German and Chinese subjects shall be at liberty to invest money if they so choose, and appoint directors for the management of the undertaking.

III. All arrangements in connection with the works specified shall be determined by a future conference of German and Chinese representatives. The Chinese Government shall afford every facility and protection and extend every welcome to representatives of the German Railway Company operating in Chinese territory. Profits derived from the working of these railways shall be justly divided pro rata between the shareholders without regard to nationality. The object of constructing these lines is solely the development of commerce. In inaugurating a railway system in Shantung, Germany entertains no treacherous intention towards China, and undertakes not to unlawfully seize any land in the province.

IV. The Chinese Government shall allow German subjects to hold and develop mining property for a distance of thirty li from each side of these railways, and along the whole extent of the lines. The following places where mining operations may be carried on are particularly specified along the northern railway from Kiaochow to Tsinan, Weihsien, Pa-shan-hsien and various other points; and along the Southern Kiaochow-Tsinan-Chinchow line, Chinchow-fu, Laiwuhsien, etc. Chinese capital may be invested in these operations, and arrangements for carrying on the work shall hereafter be made by a joint conference of Chinese and German representatives. All German subjects engaged in such works in Chinese territory shall be properly protected and welcomed by the Chinese authorities, and all profits derived shall be fairly divided between Chinese and German shareholders according to the extent of the interest they hold in the undertakings. In trying to develop mining property in China, Germany is actuated by no treacherous motives against this country, but seeks alone to increase commerce and improve the relations between the two countries.

If at any time the Chinese should form schemes for the development of Shantung, for the execution of which it is necessary to obtain foreign capital, the Chinese Government, or whatever Chinese may be interested in such schemes, shall, in the first instance, apply to German capitalists. Application shall also be made to German manufacturers for the necessary machinery and materials before the manufacturers of any other Power are approached. Should German capitalists or manufacturers decline to take up the business, the Chinese shall then be at liberty to obtain money and materials from sources of other nationality than German.

This convention requires the sanction of His Majesty the Emperor of China and His Majesty the Emperor of Germany. When the sanction of His Majesty the Emperor of China reaches Berlin the Agreement approved by His Majesty the Emperor of Germany shall be handed to the Chinese Ambassador. When the final draft is agreed to by both parties four clean copies of it shall be made, two in Chinese and two in German, which shall be duly signed by the Chinese and German Ministers at Berlin and Peking. Each Power shall retain one Chinese copy and one German copy, and the Agreement shall be faithfully observed on either side.

Dated the fourteenth day of the second moon of the twenty-fourth year of Kuang-Hsu (6th March, 1898).

FRANCE

MEMORANDUM ON RAILWAY AND MINING CONCESSIONS SECURED BY FRANCE AND FRENCH COMPANIES IN CHINA.—(TRANSLATION).

I.—PROVINCES OF CHIHLI, OR HU-PEH AND HO-NAN.

Line from Peking to Hankow.

The Société d'études de chemins de fer en Chine, a Franco-Belgian syndicate in which the French element is represented by the big financial establishments of Paris and the big metallurgical industries of France, has received a concession for a railway from Peking to Hankow .The two contracts relating to this line, for a loan and for operating, are dated the 26th June, 1898. The line will have an extension of about 1,250 kilometers. It is being built and will be operated by the Société d'Études for the mutual profit and equal advantage of the French and Belgian parties.

The loan to be floated is 112,500,000 francs. It has been agreed that the French financial share shall be three fifths, that of Belgium two fifths. A first issue of 133,000 bonds of 500 francs 5% was made at Paris and Brussels on April 19, 1899. 226,800 bonds were subscribed for, 190,800 at Paris and 36,000 at Brussels. The product of this first issue will suffice to build 500 kilometers of which 300 in the north and 200 in the south, and which will be soon finished. 150 kilometers in the north are already being operated. The building of the remainder will be seen to by a second issue as soon as circumstances permit of it.

The Société d'Études has secured the right to work mines along the line and to make, for the use of these, branch lines.

A branch company has been organized under the name of "Société Franco-Belge de Recherches Minières en Chine" to work these mines.

II.—PROVINCE OF SHAN-HSI.

Line from Tai-yuan-Fu to Cheng-ting-Fu.

The concession for this line was provided for by a contract between the Bureau of Commerce of the province of Shan-hsi and the Russo-Chinese Bank, said contract being approved by the Chinese Government May 21, 1898.

The length of the line is 246 kilometers from Tai-yuan-Fu to Cheng-ting-Fu where it will join the railway from Peking to Hankow. The line will open the very rich coal field of Ping-ting, and its exploitation should be remunerative. The concession contemplates the extension of the Tai-yuan-Fu line to the southwest. The system as above will measure from 500 to 600 kilometers and will be worth about 60 millions.

The French group in the Russo-Chinese Bank is entrusted with working this concession.

III.—PROVINCES OF SHEN-HSI AND HO-NAN.

A Franco-Belgian syndicate secured, the 6th December, 1899, a concession for a line along the course of the Yellow river from Kai-feng-Fu, capital of Ho-nan—a future station on the Hankow-Peking line, to Ho-nan-Fu, with future extension toward Hsi-an-Fu, capital of Shen-hsi.

IV.—PROVINCE OF HU-PEH.

The "Syndicat d'études industrielles et de travaux publics en Chine" secured in the month of March, 1899, a concession of the anthracite coal beds of Ainantzu, near Tsé-kiu.

V.—PROVINCE OF KIANG-SU.

The same syndicate has secured, in the month of December, 1898, the concession of the coal beds of Yuan-shan, near Nanking.

VI.—PROVINCE OF CHE-KIANG.

A local railway from Husé to Kiang-nan, near Hang-chou, at the southern end of the Grand Canal, has also been conceded in the month of February, 1898, to the "Syndicat d'études industrielles et de travaux publics en Chine."

VII.—PROVINCE OF SSU-CH'UAN.

Coal and Iron Mines.

Following the researches of the Lyons mission to China, some capitalists and manufacturers had founded in 1897, under the name of "Syndicat franco-chinois de Tchung-King," a company for working the mineral wealth of Ssu-ch'uan. This company sent to Chungking as its representative, M. Duclos, engineer, a former member of the Lyons mission, who in 1899 made a contract with the provincial Administration ceding to the syndicate the working of mines of coal and iron in different localities in the province. A capital of 10 million taels is provided for the working of these concessions, with faculty of raising it by instalments.

Petroleum Deposits.

The Bureau of the province of Ssu-ch'uan has given to a French company, the "Société francaise d'explorations minières en Chine," the right to prospect in this province for petroleum deposits which are believed to be very rich. This concession will necessitate a final exploitation contract for which purpose a French company will be organized.

Ore Deposits.

The French consulate at Chung-king secured in the month of July, 1899, from the Mining Bureau of Ssu-ch'uan, the signing of a contract under which it cedes to a company to be formed with French and Chinese capital the working of ore mines (gold, silver, copper, lead and iron) in the Tien-shan and Ma-kung districts.

VIII.—PROVINCE OF KUEI-CHOU.

Quicksilver Mines.

By two contracts of March 17 and June 26, 1898, the Chinese Government has granted the "Société francaise d'explorations minières en Chine" the concession for working the quicksilver, coal and iron mines of the province of Kuei-chou and the works and blast furnaces of Tsing-ki. This company has ceded its rights to the "Compagnie anglo-francaise des mercures et concessions minières du Kouei-Tchou" organized with a capital of 7,750,000 francs.

Three-fifths approximately of the bonds, which were issued in March 1899, are held by French.

The enterprise is running at present.

IX.—PROVINCE OF YUN-NAN.

Railway from Laokay to Yun-nan Hsien.

By a convention of the 9-10 April, 1898, the French Government secured for itself or for the Company chosen by it, the right to build a railway from Laokay (frontier of Tongking), to Yun-nan Hsien (450 kilometers), and a law of December 25, 1898, authorized the Government of Indo-China to grant a guarantee of interest to the Company which might become the grantees of this line.

In conformity with this law, the Governor-General of Indo-China signed the 15th June, 1901, with a syndicate of the principal financial houses of Paris, a convention for the building of the railway from Laokay to Yun-nan Hsien and for the working of the whole line from Haiphong to Yun-nan Hsien.

This convention was ratified by a law of July 5, 1901.

The principal provisions of the convention are the following:

The syndicate agrees to organize, within three months from the date of the passage of the law approving the convention between the Government of Indo-China and it, a stock company with a capital of 12,500,000 francs, to work the line from Haiphong to Laokay which is to be built by the Government of Indo-China, and for the purpose of building itself and working the railway from Laokay to Yun-nan Hsien. The company will receive from the colony a subvention of 12,500,000 francs and also a guarantee of three millions of francs payable during 75 years, for the bonds which it shall have issued for the purpose of building the railway.

Last July (1901) the "Compagnie francaise des chemins de fer de l'Indo-Chine et du Yun-nan" was organized, and the bonds have just been issued.

For the purpose of building the line from Laokay to Yun-nan Hsien, the company has negotiated with the "Régie générale des chemins de fer" and the "Société de construction des Batignolles," which have formed for this purpose the "Société de construction de chemins de fer indo-chinois" with a capital of 4 million.

The "Société de construction" has sent during the present month (October 1901) survey parties to Yun-nan for the final study of the line.

X.—PROVINCE OF KUANG-TUNG.

Railway from Pakhoi to the Si-kiang (West River).

In the month of June, 1898, the French Government secured from China a promise that only a Franco-Chinese Company should have the right to build a railway from Pakhoi to a point to be determined on the Si-Kiang, and, generally speaking, railways with Pakhoi as a starting point.

In December 1899, on the occasion of the delimitation of said territory at Kuang-chou Wan, the French Government secured from China a concession for a railway uniting a point on the bay of Kuang-chou to a point to be chosen on the east coast of the peninsula of Lei-chou in the neighbourhood of On-pu.

At the same time, he Chinese Government took the engagement to concede to a French-Chinese company the mines in the prefectures of Kao-chou, Lien-chou and Lei-chou.

XI.—PROVINCE OF FU-KIEN.

Arsenal of Fu-Chou.

The French Government signed October 11, 1896, with the Chinese Government a contract for the sending of a French mission for the purpose of reorganizing the naval arsenal of Fu-chou. The contract provided also for the working, for the use of the arsenal, of the deposits of ores in the province.

The French mission, under the direction of M. Doyère, naval constructor, has been pushing its work since about five years.

BELGIUM

PEKING-HANKOW (LU-HAN) RAILWAY CONTRACTS. MAY 27, 1897, JULY 21, 1897. (TRANSLATION).

LOAN FOR THE RAILWAY FROM LU-KOU-CHIAO TO HAN-KOW

(Provisional) contract between the Chinese Railway Company and the Société financière et industrielle belge en Chine, the following has been agreed upon:

ARTICLE 1. The Chinese Government has granted a concession for the railway line from Lu-kou-chiai, near the city of Peking, to Han-kow, to the Chinese Railway Company, which has already a capital of thirteen millions of taels.

The said Company is authorized by the Imperial Government to negotiate a loan of four million five hundred thousand pounds sterling to be applied solely to the building and working of the line from Lu-kou-chiao to Han-kow; the provisions hereafter set forth must be observed by the Chinese Railway Company as well as by the Société financière et industrielle belge en Chine.

ART. 2. Said loan, of a nominal value of four million five hundred thousand pounds sterling, with ten per cent discount, or a real value of four million fifty thousand pounds sterling, is agreed to by the Société financière et industrielle belge en Chine. It will be paid

in four installments of one million twelve thousand five hundred pounds sterling, representing the real value, and at the following dates:

First payment: January 3, 1898.
Second Payment: July 3, 1898.
Third payment: January 3, 1899.
Fourth payment: July 3, 1899.

These payments will be made into a Belgian bank of Brussels, chosen by the Chinese Railway Company which is at liberty to transfer this sum as it sees fit.

ART. 3. The loan agreed to by the Société financière et industrielle belge en Chine shall bear annual interest of four per cent. Said interest shall be paid in January and July of each year.

ART. 4. The Chinese Railway Company agrees to reimburse the loan provided for in the present convention, after the first ten years, in twenty annuities of two hundred and twenty-five thousand pounds sterling, repayable yearly after January 3, 1909.

The payment of interest and annuities will be made in China, into a bank designated by the Société financière et industrielle belge en Chine, and in conformity with the table of amortization annexed to the present convention.

ART. 5. With the authorization of the Imperial Chinese Government, the payment of interest and the refunding of the loan will be guaranteed by the railway line from Lu-kou-chiao to Han-kow as also by all the property and material connected therewith.

It is understood that the guarantees given for the loan provided for in the present convention, are reserved for the subscribers to the present loan and that the guarantees given for subsequent loans can nowise prejudice that now granted the Société financière et industrielle belge en Chine.

ART. 6. Except in case of force majeure, the work of building must be finished and the railway from Lu-kou-chiao to Han-kow put in operation before the expiration of five years, that is to say of 1903.

ART. 7. The contracting parties may not invoke a state of war existing in any part of the world not to keep their engagements. If said state of war should exist in China, the Belgian staff shall remain in the employ of the Chinese Railway Company, unless its assistance is asked for by the Imperial Chinese Government.

ART. 8. The Société financière et industrielle belge en Chine shall choose an experienced, reliable and honest engineer to represent it and who shall be charged with controlling the technical work; he shall, furthermore, be charged with drawing up plans and carrying them out under the exclusive authority of the General Director of the Chinese Railway Company, under whose direct orders he shall be. This Controlling Engineer will be under the absolute direction of the General Director of the Chinese Railway Company. The Chinese Railway Company reserves all rights of management of the railway. It will be responsible until the expiring of the present contract for the salary of this Controlling Engineer as fixed upon in agreement with the Société financière et industrielle belge en Chine.

ART. 9. The foreign staff needed by the Chinese Railway Company for building and operating the line, during the life of the present contract, shall be chosen and presented by the technical Controlling Engineer representing the Société financière et industrielle belge en Chine; it will be appointed by decision of the Director General of the Chinese Railway Company. The Chinese Railway Company is at liberty to settle for itself as regard its foreign staff, the form of engagement to be used, adopting long or short term contracts.

All the staff employed by the Chinese Railway Company and attached to the working of the line, with the exception of the Controlling Engineer, will be required to obey the Chinese delegates of the Director General of the Company and work harmoniously with all the Chinese and foreign staff of other nationalities, chosen and appointed by the Director General to any position, and this in the interest of the Railway Company.

If disputes arise between European and Chinese Agents, they shall be impartially settled by the Director General, aided by the representative of the Belgian Company.

The Director General of Chinese Railways shall always be at liberty to designate foreigners of whatever nationality to inspect the works under way; the Belgian Company shall never have the right to prevent it.

Nevertheless, the duty of the persons so designated shall only consist in inspecting works and they shall never have the right to give orders to the staff employed in building and working the line. Such persons may likewise make reports to the Director General of Chinese Railways on the results of their inspections.

The staff employed in building and operating shall furnish all necessary facilities to foreigners entrusted with an inspection, and that in the interest of the Chinese Railway Company.

ART. 10. In case one of the foreign employés referred to in articles 8 and 9, irrespective of duties, should through carelessness, incapacity, disobedience of the orders of the Director General, insubordination, drunkenness, or bad conduct, be held to be unfit for the service the Director General shall have the right to cancel the contract and the dismissed agent shall leave at once the service of the Chinese Railway Company.

ART. 11. The materials necessary for the Chinese Railway Company, exclusive of all that can be manufactured in China or of that that can be manufactured there later on, shall be bought abroad.

The Director General shall decide, in consultation with the Controlling Engineer, the amount of materials to ask bids on; said quantity, however, shall never exceed fifty per cent of that required.

The award shall be made without any special favor for the Société financière et industrielle belge en Chine. If this Company agrees to furnish at perfect equality of conditions as to quality, price and carriage with those secured by the Chinese Railway Company, the Belgian Company shall have the furnishing of said materials; but if said Company is unable to supply under the above-mentioned conditions, the Chinese Railway Company will make its purchase where it likes; the Belgian Company shall in no way prevent it so doing.

As to the materials which cannot be divided in accordance with paragraph 2 of the present article (50 p. c. maximum asked for), if the Belgian Company agrees to furnish at perfect equality of conditions as to quality, price and carriage with those secured by the Chinese Railway Company, the furnishing shall be granted the Belgian Company; in the contrary case, the Chinese Railway Company shall in no way prevent it so doing.

The Chinese Railway Company reserves to itself the right to use all means it may deem good to inform itself as to the best prices for supplying all its materials, without the Belgian Company interfering in any way with its inquiries.

ART. 12. As a premium, the Chinese Railway Company will pay the Belgian Company a sum of five per cent on the net value, less the cost of transportation, insurance, etc., on all materials bought abroad. The materials for the branch from Lu-kou-chiao to Paoting is not subject to the premium provided for in the present article because nearly the whole amount of said materials has already been bought.

ART. 13. The taking over of material bought in Belgium will be in the factories making it and by a commission consisting of a delegate of the Chinese Railway Company and of a delegate of the Société financière et industrielle belge en Chine; in case of disagreement, these two delegates shall choose an umpire to decide the question. The expenses of the delegates shall be borne by the Company designating them. The expenses of the umpire shall be borne by the losing party.

ART. 14. The Société financière et industrielle belge en Chine and its chosen agent shall deal with no other persons or accept any other authority than the Chinese Railway Company. The latter, on its side, shall only recognize the Société financière et industrielle belge en Chine, established at Brussels, in 1897, to the conclusion of every other company.

During the life of the present contract, the Belgian Company shall in no wise be managed by manufacturers or subjects of other countries, and the Belgian Company shall not be at liberty to transfer this contract to any other country, nor to the subjects of another country.

ART. 15. If the provisions set forth in the present convention are regularly adhered to by the Chinese Railway Company, the Société financière et industrielle belge en Chine agrees, in case of necessity, to study means, in conjunction with the said Company, to secure to it special facilities for extending the terms of paying off the annuities and interest.

In case extensions are granted, the amounts which should have been refunded shall bear the same interest as that provided for the loan in the present convention.

If the Chinese Railway Company wishes to refund the whole loan before the date on which it falls due, it will be at liberty to do so and the interest will cease from the day of such refunding, and the contract shall be declared void from that day.

ART. 16. All the above provisions are agreed upon in the provisional contract made this day; this provisional convention is signed by the Director General of the Chinese Railway Company on the one part, and stamped with his seal, and, on the other part, by the two representatives of the Société financière et industrielle belge en Chine, and viséed for authentication by the Consul of Belgium at Hankow.

Within two months from the date of signing of the provisional contract, the Chinese Railway Company and the Société financière et industrielle belge en Chine will sign again so as to confirm the provisional contract which shall then become final.

These formalities complied with, the contract shall receive the seals of Their Excellencies the Viceroys of Pechili and of Hu-Kwang, and also that of H. E. the Minister of Belgium, at Peking.

ART. 17. The present contract has been drawn up in the French and Chinese languages; when necessity arises for consulting the contract, the two texts, absolutely identical, shall both be authoritative.

Done at Wuchang, the 27 of the month of May 1897.

The Chinese Railway Company being represented by H. E. Sheng-Hsuan-Huai, its Director General.

The Société financière et industrielle belge en Chine being represented by MM. Masy and Rizzardi.

II

ADDITIONAL PROTOCOL TO THE CONTRACT RELATING TO THE LOAN FOR FOUR MILLION FIVE HUNDRED THOUSAND POUNDS STERLING FOR THE RAILWAY FROM HAN-KOW TO LU-KOU-CHIAO.

A provisional contract was made, at Wuchang, the twenty-seventh day of the month of May one thousand eight hundred and ninety seven (twenty-sixth day, fourth month, twenty-third year of the present reign) relating to the loan for the railway from Lu-kou-chiao to Han-kow.

Between

The General Company of Chinese Railways, established by Imperial decree of the twentieth October one thousand eight hundred and ninety six (fourteenth day, ninth month, twenty-second year of the present reign), and to which was granted, by the same decree, the concession for the said line, of the first part;

And the Belgian Company, established by authentic act dated the third March one thousand eight hundred and ninety seven, published in the Moniteur Belge (official paper) of the twenty-second, twenty-third March one thousand eight hundred and ninety-seven, of the second part.

This contract was authorized by Imperial decree of the twenty-fifth May one thousand eight hundred and ninety-seven (twenty-fourth day, fourth month, twenty-third year of the present reign). The decree of that date will be communicated to H. E. the Minister of Belgium at Peking through the Tsung-li Yamen.

The Chinese Railway Company, represented by H. E. Sheng, its Director General, duly authorized for that purpose by the above mentioned decree and the Belgian Company, represented by M. Alexis Dufourny, Chief Engineer, Director of the Ponts et Chaussées at Brussels, and by M. Edouard Walin, First class Engineer of the Ponts et Chaussées, Director of the Intercommunal Waterworks Company at Brussels, duly authorized on their side by the Belgian Company, authority confirmed by a telegram of H. E. the Belgian Minister at Peking, sign anew, in the name of the interested parties, the provisional contract according to the terms of article sixteen of the latter, so as to confirm it and make it final, and agree furthermore on the following:

ARTICLE 1. The above mentioned Belgian Company will make a complete study of the line from Han-kow to Lu-kou-chiao for the Chinese Railway Company; it undertakes to make the surveys, levelling, longitudinal and sectional cuts, to make all plans, drafts of masonry works, bridge, buildings, shops, stations and outhouses of whatever nature, as also the measurements and specifications, all charges for which are included in the forty-hundredths per cent. of additional interest mentioned hereafter in Article 3.

A similar study will be made for the rolling and fixed stock. But in conformity with article eight of the contract, the drafts and plans shall be successively submitted to the approval of the General Director. It is well understood that all these works are to be carefully done, without any omission; they are not to occasion any additional expenses.

Field work for the carrying out of the works must be finished within a year from the date of the conclusion of the last formalities of approval of the contract. They must be carried out with the necessary activity to permit of the embankment work being begun within six months of the above mentioned date.

ART. 2. The Belgian Company surrenders its right to a premium on materials, conferred on it by article twelve of the contract, and therefore said article is considered as void.

ART. 3. On the other hand, as compensation for the concessions mentioned above in Articles 1 and 2, and to guarantee its expenses of organization, mission abroad and issuing (the loan), inclusive of all disbursements whatsoever relating thereto, and finally its general expenses during the whole time of the loan, the Belgian Company shall receive an increase of forty hundredths per cent (four per thousand) on the rate of interest provided for in article three of the contract. This additional interest of four per thousand will be paid in the same manner as the yearly interest of four per cent; consequently the rate of interest of four per cent, together with all the general expenses, is raised, in effect, to four and forty per cent (4.40 p. c.). No charge whatsoever in excess of this rate of interest shall be asked for.

ART. 4. The payments provided for in article two of the contract shall be made into the Belgian Bank at Brussels, designated by the name of "Société Générale pour favoriser l'Industrie Nationale," and the Chinese Railway Company will transfer (thereto) the sums paid into the Commercial Bank of China at Shanghai, organized by Imperial decree under date of the twelfth November one thousand eight hundred and ninety-six (eighth day, tenth month, twenty-second year of the present reign). The payments of interest and annuities will be made in pounds sterling into the above mentioned Commercial Bank.

ART. 5. It is understood that the guarantee of the railway line, referred to in article five of the contract, has absolutely priority of rank.

ART. 6. The present protocol shall be stamped with the seal of Their Excellencies the Viceroys of Pechili and of Hu-Kwang, and also with that of H. E. the Minister of Belgium at Peking.

The present protocol has been made out in four copies in the French and Chinese languages; both versions are equally authoritative.

Done at Shanghai, the twenty-first of July one thousand eight hundred and ninety-seven.

For the Chinese Railway Company,
The Director General,

SHENG.

For the Belgian Company,
The first class Engineer of Ponts et Chaussées, Director of the Intercommunal Waterworks Company,

WALIN.

The Chief Engineer, Director of Ponts et Chaussées,

DUFOURNY.

III

LOAN CONTRACT

Between the undersigned:

1. Their Excellencies the Viceroys of Chihli and of Hupeh, acting in virtue of full powers from the Imperial Chinese Government, duly authorized by decree of H. M. the Emperor of China, under date the 20 October, 1896, of which communication has been officially made to the Representatives of Belgium at Peking, by dispatch of the Tsung-li Yamen, under date of

2. The Imperial Government of China, represented by H. E. Sheng Hsuan-huai; Director General of the Chinese Railway Company;

3. The Chinese Railway Company, represented by H. E. Sheng-Hsuan-huai, its Director General,

and the Société d'Etude de Chemins de Fer en Chine, represented by M. Eugene Hubert, engineer,

Has been agreed the following:

ARTICLE 1. The Imperial Chinese Government has, in compliance with a decree dated the 20 October, 1896, of which copy is annexed to the present contract, granted the concession of the line from Lu-kou-chiao (Peking) to Hankow (about 1,300 kilometers) to the Chinese Railway Company, which has assets amounting to thirteen million taels.

An edict of H. M. the Emperor of China has authorized Their Excellencies the Viceroys of Chihli and of Hupeh and H. E. Sheng Hsuan-huai, Director General of Chinese Railways, to contract, in the name and on account of the Imperial Chinese Government, a loan the product of which is destined exclusively to the building of the above mentioned line.

This edict, bearing date the 20 October, 1896, and of which a copy is annexed to the present contract, is worded as follows:

"Edict of His Majesty the Emperor of China:

"In response to a request of Their Excellencies the Viceroys of Chihli and of Hukwang, "presented to His Majesty the Emperor of China, "an Imperial edict, bearing date of this day, "authorizes the organizing of a Railway Company and grants it the concession of the line "from Lu-kou-chiao (Peking) to Hankow. "His Majesty the Emperor authorises the Railway Company to contract abroad a loan the "product of which shall be devoted in full to "the building of said line."

"H. E. Sheng Hsuan-huai, under-secretary "of State, is appointed Director General of this "new Company."

"Peking, the 20th October, 1896."

In compliance with the terms of this edict, the Imperial Chinese Government, represented by Their Excellencies the Viceroys of Chihli and of Hupeh and the Director General of Chinese Railways, has decided to contract a State 5 p. c. foreign gold loan, of a nominal value of 112,500,000 francs (or 4,500,000 pounds sterling).

This loan shall be known as the Chinese 5 p. c. 1898 Loan.

ART. 2. This loan will be represented by 225,000 bonds of 500 francs gold. These bonds, the text of which is annexed to the present Contract shall be signed in the name of the Imperial Chinese Government by the Viceroys of Chihli and of Hupeh and by the Director-General of the Chinese Railway Company.

They shall be issued in blocks of 1 to 5 bonds, in the proportion to be indicated by the Société d'Etude de Chemins de fer en Chine and are to be manufactured at its expense.

They shall bear 5 p. c. interest annually on the par value payable in gold.

Interest shall accrue from the date of the payment and shall be payable the 1st September and the 1st March of each year.

The first coupon is payable in gold at ------ francs.

ART. 3. The loan shall be extinguished in twenty years, from the year 1909, by yearly drawings by lot (tirages au sort), which will take place in Brussels, in the offices of the Société Générale pour favoriser l'Industrie Nationale, in conformity with the table annexed to the present.

The drawings shall take place the second Tuesday of January each year; the first drawing shall take place on that date in 1909.

The numbers of the bonds drawn shall be published in four newspapers at the expense of the Société d'Etude des Chemins de fer en Chine.

ART. 4. The bonds drawn shall be refunded in gold at their par value on the date on which falls due the next coupons.

The bonds presented for reimbursement must have attached to them all the coupons remaining unpaid, and the amount of missing coupons will be deducted from the capital to be refunded.

Interest on bonds ceases to accrue from the date set for reimbursement.

ART. 5. The Imperial Chinese Government denies itself the right before the 1st September 1907 to increase the amortization, to pay off the whole loan or to make a conversion of it. After that date, it shall be at liberty to pay off the loan at any time before the terms of payment, and once the refunding made, the contract shall be declared annulled.

ART. 6. The coupons and the bonds (titres) redeemed (amortis) shall be payable in francs, in Europe in the office or offices designated by the Société d'Etude and entrusted by it with the management of the loan.

ART. 7. Payment of interest and refunding of bonds of the present loan are guaranteed by the gross revenues of the Imperial Chinese Government.

Furthermore, in virtue of an authorization already granted by the Chinese Government and in agreement with it, the Chinese Railway Company declares that it specially assigns, preferentially for the payment of interest and capital of the present loan, and consequently cedes and delegates in favor of said bonds all the net revenues of the line from Lu-kou-chiao (Peking) to Hankow,—after the regular payment of all expenses of administration and operation, the whole, as is furthermore set forth in a treaty for operating (the line) concluded between the Chinese Railway Company and the Société d'Etude de Chemins de fer en Chine, treaty hereto annexed and forming an integral part of this contract.

This assignment (affectation) is made exclusively and irrevocably until complete refunding of the bonds of the present loan.

ART. 8. The Chinese Railway Company directs the Société d'Etude to deposit the funds from the net revenue of the traffic with the Société Générale pour favoriser l'Industrie Nationale, established at Brussels, or with the company designated by it.

This latter shall convert into gold, and to the best interest of the Imperial Chinese Government and the Chinese Railway Company, and up to the full amount of the sum necessary to insure the service of the loan at the following semi-annual payment, the deposits made with it by the Société d'Etude empowered by the Chinese Railway Company to make them.

These deposits by the Société d'Etude with the Société Générale Belge or the company designated by it shall continue to be made until the sum necessary for the full service of the loan at the date of the next semi-annual payment has been completed in gold, and in such manner that said service is insured three months at least before said semi-annual payment falls due. The depositories shall utilize these sums in the manner the most advantageous for the Chinese Company.

The account on which these sums are borne shall be charged twenty days before date of semi-annual payment with the sum necessary

for the service of the loan, interest, amortization, expenses and commissions.

ART. 9. The bank having received in deposit the funds shall have the right to take, without new authorization, from such funds on deposit, the amount of the coupons to be paid during the period of construction.

ART. 10. So as to insure the guarantee just mentioned for the bonds of the present contract, the Chinese Railway Company recognizes for these bonds a prior special lien on the railway from Lu-kou-chiao (Peking) to Hankow: line, stationary and rolling stock and receipts.

This special assignment is accepted in the name of the bondholders by the Société d'Etude. In case of non-execution of the obligations assumed by the Chinese Railway Company in the present contract, the Société d'Etude or the Belgian Company designated by it, shall have full power to enjoy as to said property all the rights and powers resulting from said special assignment.

ART. 11. The preceding provisions do not relieve the Imperial Chinese Government from personal responsibility relative to the present loan, as this responsibility is specified in Article 7.

Consequently, the Imperial Chinese Government agrees to make up the necessary amount for the service, in gold, of the loan, in case the sums accruing from the net proceeds of the line from Lu-kou-chiao (Peking) to Hankow, and paid by the Société d'Etude, entrusted with this service by the Chinese Railway Company, to the Société Générale Belge, or to the Company which it may designate, should not have reached, after their conversion in gold, and at least three months before the following semi-annual payment, the amount sufficient to cover said service.

In this case, and upon the request made it, the Imperial Chinese Government must hold at the disposal of the Société Générale Belge or of the Company designated by it 60 days before the next semi-annual payment, gold or securities deemed sufficient to realize the amount in gold, which the Company shall have notified the Government is necessary to complete the payment.

ART. 12. Out of the sums coming from the payments made by the Société d'Etude or the payments made by the Imperial Chinese Government, the Société Générale Belge, or the Company designated by it, shall in due time place at the disposal of the Firms entrusted with the service of the loan, the necessary amounts, according to the needs as ascertained during the preceding half-year.

ART. 13. The Imperial Chinese Government will pay to the Firms entrusted with the service of the loan, a commission of ¼ per cent on the amount of paid coupons and a commission of ¼ per cent on the amount of the bonds drawn or redeemed by anticipated reimbursement. The amount of this allowance shall be deducted every six months from the surplus of the available exploitation receipts, and, in case of insufficiency, it shall be immediately paid by the Imperial Chinese Government.

ART. 14. The Imperial Chinese Government binds itself by the present conventions to observe and cause to be observed the privilege stipulated in favor of the bonds in article 9, and to maintain, free and exempt from all tax whatsoever, the bonds and coupons, as well as all transactions of whatsoever nature connected with the service of the loan.

ART. 15. Coupons which shall not have been presented for cashing within five years following their falling due, shall revert to the Imperial Chinese Government; thirty years shall be the limit for redeemed bonds.

On the death of any bondholder of the present loan, the bonds shall be transferred and shall belong to his heirs, according to the inheritance laws in force in the country of which the deceased bondholder was citizen.

Payments of coupons and the redemption of bonds shall be made in time of war, as in time of peace, to the bearers whether they be subjects of friendly or hostile States.

In case of loss, of theft or destruction of bonds of the present loan, the Chinese Government shall replace them, after having been furnished satisfactory proof of their loss or of the destruction of the title deeds and of the rights of the claimants.

ART. 16. The Imperial Chinese Government through its representatives in Europe shall immediately take the necessary steps and furnish the necessary documents for the official listing of the present loan in the Bourses of Brussels and Paris.

ART. 17. Out of the total amount of the present loan, representing as nominal capital a sum of 112,500,000 francs, the Société d'Etude de Chemins de fer en Chine purchases outright (achète ferme) 39,000,000 francs of nominal capital, or 78,000 bonds of 500 francs, at 90%, for the total sum of 35 million 100,000 francs, delivery to date from the payment to the banks designated in the following article.

ART. 18. The Société d'Etude de Chemins de fer en Chine shall deposit the amount of this purchase, as follows: 8,600,000 francs in the Russo-Chinese Bank at Shanghai, and the remainder in a bank designated by common accord by the Director General of the Chinese Railway Company and the Société d'Etude and against receipt by the Russo-Chinese Bank in Paris of definite bonds for 78,000 bonds bought outright (achetés ferme) and deposit in the same bank of the definite bonds for 147,000 bonds forming the surplus of the loan.

The Russo-Chinese Bank and the Bank designated by common accord by the Chinese Railway Company with the sums deposited with them, it being understood that these depository establishments shall not be obliged to deliver these sums, except under the conditions and under the reservations indicated in undermentioned Article 20.

ART. 19. The Chinese Railway Company declares that it has resources amounting to thirteen million taels.

The construction of the railroad from Lu-kou-chiao (Peking) to Hankow being limited provisionally to the section from Lu-kou-chiao (Peking) to Paoting (145 kilometers) and to the Hankow Sinyang section (247 kilometers) which must be constructed first; it is understood that the thirteen million taels above mentioned shall in the first place be applied to the construction and to putting in complete working order of the Lu-kou-chiao-Paoting section.

The construction of the entire line (not including the Peking-Paoting section) shall be done under the direction of the Société d'Etude de Chemins de fer en Chine or its representatives, but for the account of the Chinese Railway Company.

The Société d'Etude shall make the studies, plans, surveys, estimates for the whole line, direct the execution of all the work and order the materials, machinery and furniture necessary to insure the regular operation of the line. However, the Director General of the Chinese Railway Company reserves to himself the right to approve the building plans and contracts for supplies.

Except for supplies of materials and expenses of all kinds paid in Europe, the Chinese Railway Company must place at the disposal of the Société d'Etude the necessary sums for settling all payments without exception necessitated in the carrying out of the work, as well as the payment of the staff under the orders of the Société d'Etude and, in general, all expenses whatsoever.

Consequently the Société (d'Etude) shall not be obliged to pay any expenses from its own funds.

It shall endeavor to complete the construction of the line within three years.

ART. 20. On the Hankow-Sinyang section and eventually on the other sections between Paoting and Sinyang, the Russo-Chinese Bank in the first place and afterwards the bank designated by common accord by the Chinese Railway Company and the Société d'Etude, shall deposit each month with the Chinese Railway Company, out of the available funds in their hands, the amounts necessary to settle the payments for the ensuing month, according to the estimates prepared by the Société d'Etude or its delegates.

A first transfer equivalent to the estimated value of the work already executed on the Hankow-Sinyang section shall be made as a first credit.

The price paid for the above mentioned bonds being exclusively affected to the construction of the line from Hankow to Paoting, the Russo-Chinese Bank and the bank referred to in the first paragraph of the present article, would have the right not to pay the funds in case one of their payments were diverted from the purpose stipulated as well as in case the representatives of the Société d'Etude were no tempowered by the Chinese Railway Company to continue the management of the construction works with which this company is exclusively entrusted.

The balance, if there be one, shall be held subject to the order of the Chinese Railway Company.

ART. 21. The Chinese Government cedes to the Société d'Etude an option till December 31, 1901, to purchase the surplus of the loan, to wit: 73,500,000 francs at 90% nominal, plus the accrued fraction due on the coupon.

This option can be availed of one or several times, without regard to the amortization made, but each notice must be for a sum not less than 25,000,000 francs net.

The delivery of the bonds taken on the options shall be to the Russo-Chinese Bank in Paris; the final bonds shall be delivered within a month dating from the telegraphic notifications to the management of the Chinese Railway Company.

The price of these bonds shall be deposited in the bank designated by common accord, by the Chinese Railway Company and the Société d'Etude, and it shall not surrender them except under the conditions stipulated in the above article 20.

ART. 22. If the Société d'Etude takes advantage of the right granted it to purchase all or part of the bonds on which it holds an option, it shall each time confer with the Chinese Railway Company to determine upon the sections (of line) to be built with its new funds.

ART. 23. The surveys of the line, dating from the signing of the present contract, are to be made at the expense of the Chinese Railway Company; the Hankow-Sinyang sections shall first be surveyed, and then successively each of the other sections, for building which an agreement may be had before the Société d'Etude avails itself of the right of option conceded it by Article 21.

It is henceforth understood that the section to be built with the funds derived from the first option shall be the one from Paoting towards the Yellow River, and the survey shall be begun during the first year.

ART. 24. La Société d'Etude reserves the right to make one or more issues, by public subscription or otherwise, of all or any part of the bonds whether bought outright (achetées ferme) or included in the option.

Should the issue be by public subscription, the Société d'Etude shall have the right to include in the total offered for subscription, exclusive of the 78,000 bonds taken outright (prises ferme) all or any part of the bonds covered by the option, without on that account being committed to take outright (prendre ferme) any part whatever of the bonds covered by the options.

It shall be allowed fifteen days, counting from the closing of the public subscription, to inform by registered telegram addressed to His Excellency Sheng, Director General of the Chinese Railway Company at Shanghai, the number of bonds it has taken, and that, at the price and under the conditions above specified.

The payment and the delivery of the bonds taken by the Société d'Etude following the public subscription shall take place under the conditions specified in the above mentioned articles.

ART. 25. The present contract shall only be binding on the Société d'Etude inasmuch as it shall have the promise that, with the exception of what can be supplied by the Hanyang works, all the materials and supplies necessary for the construction and working of the railroad from Lu-kou-chiao (Peking) to Hankow will be ordered from the Société d'Etude which will fill the orders under the best possible terms.

Exception is made for the material necessary for the equipment (armement) of the line from Lu-kou-chiao to Paoting, as this material is almost entirely ready.

Compliance with the provisions of this clause by the Chinese Railway Company shall result from the ordering of material for each of the sections undertaken.

Material ordered from the Société d'Etude shall be exempt from all customs and likin duties on entering or crossing Chinese territory.

If this franchise is not made good before the expiration of the month following the date on which the Belgian Government shall have notified the Société Belge of the receipt of the notifications stipulated in article 29, it (the Société d'Etude) reserves the right not to hold itself bound.

It reserves the same right and within the same time if extraordinary events should arise, as for instance war, or if the French Debt (rente francaise) should fall below par.

If, on its side, the Société Belge should not keep the terms of the present contract, it shall be annulled; the Chinese Railway Company shall be free to enter into contract with whomsoever it may see fit, and to dispense with the services of the Engineer-in-Chief.

ART. 26.—In case of controversies or differences between the Société d'Etude or its representatives and the Imperial Chinese Government or the Chinese Railway Company, these controversies or differences shall be submitted to the judgment of a member of the Tsung-li-Yamen and the Belgian Minister in China.

In case of disagreement between these latter, the Tsung-li-Yamen and the Belgian Minister shall designate an arbitrator who shall decide finally.

ART. 27. As guarantee for the financial execution of the present contract, the Société d'Etude has already deposited in the Russo-Chinese Bank 20,000 pounds sterling as security.

It shall take full possession of this sum as soon as it shall have fulfilled the provisions stipulated in the first two paragraphs of article 18 here above.

It is understood that the payment of 8,600,000 francs to the Russo-Chinese Bank at Shanghai must be made within the month following the date of the signing of the present contract.

ART. 28. The Tsung-li-Yamen shall be bound in case the Belgian Minister at Peking request it to give cognizance of the title to the Minister of the foreign country, indicated by him, as subscriber to the issue of stock.

ART. 29. The present contract is made in triplicate, one copy for the Chinese Government, one for the Chinese Railway Company and the third for the Société d'Etude de Chemins de fer en Chine.

In case of doubt or disagreement, the French text alone shall be used to interpret the contract.

The present contract must be submitted through the proper channel for Imperial Sanction, and when said Sanction has been obtained, the Tsung-li-Yamen must advise the Belgian Representative at Peking by official dispatch and eventually the Representative in Peking of the foreign country to whom it may give cognizance of the title (le Représentant á Pekin du pays étranger le titre sera notifié). These formalities shall be complied with within the month following the signing of the contract. The provisions of the contract signed at Wuchang the 25th May, 1897, and of the protocol signed the 21st July, 1897, which do not conflict with the present contract, especially those of Article 14 of the Wuchang contract and Article 2 of the Shanghai protocol, are and remain in force. The Société Générale of Brussels and the Russo-Chinese Bank are parties to the present contract, and they, after having examined the preceding contract, declare that they, as far as necessary, accept the duties imposed. According to Article 14 of the above mentioned Wuchang contract, the Chinese Railway Company will only recognize the Société Belge as contracting party.

Done at Shanghai, the twenty-sixth day of the month of June, one thousand eight hundred ninety-eight.

The Engineer representing the Société d'Etude de Chemins de fer en Chine.

The Director General of the Chinese Railway Company.

The Representatives of the Imperial Chinese Government:

The Viceroy of Hupeh,
The Viceroy of Chihli.

OPERATING CONTRACT

Between the undersigned:

1. The Imperial Chinese Government, represented by Their Excellencies, the Viceroys of Chihli and of Hupeh;

2. The Chinese Railway Company, represented by His Excellency Sheng Hsuan-huai, its Director General of the Company at Shanghai.

And the Société d'Etude de Chemins de fer en Chine, whose office is at Brussels,

Has been agreed as follows:

ARTICLE 1. The Chinese Railway Company, in accord with the Imperial Chinese Government, entrusts the Société d'Etude de Chemins de fer en Chine, which shall appoint representatives for that purpose, with the direction, administration, and operating of the line from Hankow to Lu-kou-chiao (Peking), for which it holds a concession, under the terms of an edict of His Majesty the Emperor of China dated October 20, 1896, and of which a copy is annexed to the present contract.

ART. 2. The Société d'Etude shall take over the working of the line as soon as each section is completed, following final acceptance by the Imperial Administration of Chinese Railways. Each section must be completely and previously equipped and provided with all the material necessary for its working, as well as with the supplies of tools, furniture and a fund for running expenses. The Société d'Etude or the representatives it shall appoint under the provisions of Article 1, shall organize the various services, shall have the right to hire the personnel, which it shall have absolute right to dismiss, or disband, and to fix its salaries according to a fixed schedule previously communicated to the Director General of the Chinese Railway Company. It shall make all purchases necessary for operating, maintaining or repairing the road; it shall fix the schedule of rates in the terms of concession contracts, collect revenues of all kinds and pay the operating and management expenses of the Company. The foregoing measures, taken for the purpose of operating the line, shall be submitted, for consultative purposes, to the Director General of Chinese Railways.

The Chinese Railway Company, which will appoint delegates for that purpose, shall have absolute right of control over the receipts and expenses.

The purchase of all new material or works for the improvement or extension of the regular road, or of stations, which may be found necessary after the opening of each section of the line to traffic shall be at the sole expense of the Chinese Railway Company. As far as possible the supplies necessary for the maintenance and repairing of the road shall be ordered from the works and mines under the control of the Director General of the Chinese Railway Company.

ART. 3. In case of war or revolution in China, the transportation of troops, munitions and of the supplies of the Chinese army shall have right of way over all commercial transportation. The rate for such transportation shall be 50 per cent of the tariff, and it shall be carried according to the instructions of the Director General of the Chinese Railway Company. The transportation of anything of nature to injure the Imperial Chinese Government shall moreover be forbidden.

ART. 4. Out of the receipts from operation available, after payment of all expenses, the Société d'Etude shall retain the necessary sum to insure the payment, every six months, and at least three months before its date of payment, of the service of the loan of 112,500,000 francs contracted by the Imperial Chinese Government.

This reserve shall be made as long as said loan is not entirely paid off.

The amount of this reserve shall be deposited monthly with the Société Générale Belge pour favoriser l'Industrie Nationale, or with the Company designated by it. The latter shall convert into gold on the best terms procurable the sums paid to it for the service of the loan.

When, by means of the sums thus paid in, the service in gold of the loan shall have been insured, the Société d'Etude shall deduct 10% of the surplus, which shall be applied to the creation of a reserve fund for rebuilding or making extraordinary repairs necessary to insure the working of the lines.

It shall then pay the balance remaining available out of the operating revenues to the Chinese Railway Company.

ART. 5. The duration of the present operating contract is fixed at thirty years dating from the signing of the contract.

However, this period would be fully entitled to extension in case the loan of 112,500,000 francs should not at that time be wholly paid off; this extension would continue as long as the complete amortization had not been made. But if the refunding of the loan should be made before the dates on which they fall due, the present working contract will be annulled from the date of the total refunding of the loan.

ART. 6. During the entire period of the working of the line by the Société Belge, the Chinese Railway Company grants it 20% of the net profits of the railroad from Peking to Hankow, as agreed upon by mutual consent, after the closing of each fiscal term (exercise), taking into account, naturally, the sums necessary for the service of the interest and the amortization of the loans.

ART. 7. In case of contentions or disagreement between the Société d'Etude and the Management of the Chinese Railway or the Imperial Chinese Government, said contentions and disagreements shall be settled as specified in Article 26 of the loan contract.

ART. 8. If the revenues from operating the lines are not sufficient to cover the expenses, the Chinese Railway Company must supply the Société d'Etude with the necessary means to insure the operating of the lines under normal conditions.

ART. 9. All materials and supplies needed by the Société d'Etude for the working of the line, as well as for the maintenance and repair of the line, shall, when imported from abroad, be exempt from all customs or likin dues.

ART. 10. The present contract is made in triplicate; one copy for the Imperial Chinese Government, one for the Chinese Railway Company, and the third for the Société d'Etude de Chemins de fer en Chine.

In case of doubt or disagreement the French text shall alone be accepted for the interpretation of the contract.

The present contract must be submitted through the proper channel for Imperial sanction, and when said sanction shall have been obtained, the Tsung-li Yamen must advise, by official dispatch, the Belgian Representative at Peking and eventually the representative at Peking of the foreign Government to which the title may be officially notified (auquel le titre sera notifié).

Done in Shanghai, the twenty-sixth of the month of June eighteen hundred ninety-eight.

The Engineer representing the Société d'Etude de Chemins de fer en Chine.

(Sgd.) HUBERT.

The Director-General of the Chinese Railway Company,

(Sgd.) SHENG-HSUAN-HUAI

Seen for authentication:

(Sgd.) FRERE,
Belgian Consul.

Witnesses:

(Sgd.) HU.
KO.

(Official seal of the Chinese Railway Administration.)

The Representatives of the Imperial Chinese Government:

The Viceroy of Hupeh,
The Viceroy of Chihli.

CONTRACT FOR BUILDING A RAILWAY FROM KAI-FENG FU TO HO-NAN FU. (SIGNED AT SHANGHAI, 1904.)

Between the undersigned:

1. The Imperial Chinese Railway Company, represented by H. E. Sheng Kung Pao, Director-General, duly authorized by the Chinese Government.

2. La Compagnie Générale de Chemins de Fer et de Tramways en Chine, represented by Monsieur Armand Rouffart, its delegated Administrator, provided with full powers.

It has been agreed as follows:

Article 1.—The Director-General of the Imperial Chinese Railway Company, H. E. Sheng Kung Pao, has in a report asked the Chinese Government that a line of railway should be built starting from a point called Yung Tse on the railway line of the Luhan where the latter crosses the river. From that point eastward to Kai-feng the line will be 170 li long, and westward to Ho-nan Fu it will cover 250 li. These two branches of the Luhan to be built by a Belgian party (groupe), which will make a loan to build them.

This proposal was accepted by a decree dated the 30th day of the 10th moon of 25th year of the present reign.

Monsieur Rouffart, the representative of La Compagnie Générale de Chemins de Fer et de Tramways en Chine, has asked us by letter to undertake this building, and we sent a Chinese official to accompany him in his preliminary study on the ground. After said study, Monsieur Rouffart estimated the probable cost of these two branches at one million pounds sterling, or 25,000,000 francs; and for all other terms the contract from Peking to Hankow are to be followed.

Under date of the 29th day of the 12th moon of the 28th year of the present reign the Wai-Wu-Pu wrote to me that I was to discuss the terms of the contract with Monsieur Rouffart, and it asked me to settle the matter as promptly as possible.

Considering that Monsieur Rouffart has full powers from the Compagnie Générale de Chemins de Fer et de Tramways en Chine to negotiate this business for it, we, Director-General of the Imperial Chinese Railway Company, and Monsieur Armand Rouffart, representing the Compagnie Générale de Chemins de Fer et de Tramways en Chine, hereby enter into a contract for a loan, the product of which shall be applied to the building of the Railway from Ho-nan Fu to Kai-feng Fu.

Before signing the contract the Director-General of the Imperial Chinese Railway Company has submitted said contract for Imperial sanction, and it has been approved under date of ———.

This decree shall form Annex 1 of the present contract. In virtue of the above the Director-General, on account of the Chinese Government, makes a gold 5 per cent. loan for the sum of 25,000,000 francs, or 1,000,000 pounds sterling. This loan shall be known as the Chinese Government 5 per cent. Gold Foreign 1903 Loan (*Emprunt du Gouvernement Chinois 5 pour cent ou Extérieur* 1903).

Article 2.—This loan shall be represented by 50,000 bonds of 500 francs gold each

These bonds, the text of which is annexed to the present contract (Annex 2), shall be signed in the name of the Chinese Government by the Minister Plenipotentiary of China at Brussels.

They shall be delivered in fractional bonds (coupons) of 1 to 2 bonds, in such proportion as the Compagnie Générale de Chemins de Fer et de Tramways en Chine may request, the total number not to exceed 50,000; the expense of making these bonds shall be charged to the Compagnie Générale de Chemins de Fer et de Tramways en Chine. They shall bear 5 per cent. interest a year on the nominal capital payable in gold.

Interest shall run from the date of payment of the product (of the sale) of the bonds, and shall be payable the 1st January and 1st July of each year.

Coupons which have become due and have been paid shall be classed in numeric order by the Compagnie Générale de Chemins de Fer et de Tramways en Chine, and at its expense, and it shall then send them to the Imperial Chinese Railway Company at Shanghai to be cancelled. If the returned coupons are lost in transmission the Compagnie Générale de Chemins de Fer et de Tramways en Chine must publish the numbers of the paid and lost coupons in four different newspapers, and transmit to the Imperial Chinese Railway Company a declaration stating the loss.

Article 3.—The loan shall be redeemed in twenty years counted from the tenth year of issue, by the method of drawing by lots in the offices of the Compagnie Générale de Chemins de Fer et de Tramways en Chine, in accordance with the table annexed to the present contract (Annex 3). The drawings by lots shall take place on the third Wednesday of April in each year. The first drawing shall take place on that date beginning with the tenth year from the date of issue of the loan.

The numbers of the drawn bonds shall be published in four newspapers at the expense of the Compagnie Générale de Chemins de Fer et de Tramways en Chine.

Article 4.—The bonds drawn by lots shall be paid in gold at their par value on the date on which fall due the coupons following the date of the drawing. Bonds presented for refunding must have attached all coupons still unpaid, and the amount of missing coupons will be deducted from the capital to be reimbursed. Interest on bonds will cease to accrue from the day set for reimbursement. Paid off bonds shall be classified and sent back by and at the expense of the Compagnie Générale de Chemins de Fer et de Tramways en Chine to the Imperial Chinese Railway Company at Shanghai to be cancelled. If these bonds should be lost on the way, the Compagnie Générale de Chemins de Fer et de Tramways en Chine shall publish the numbers of the paid and lost bonds in four different newspapers, and transmit to the Imperial Chinese Railway Company a declaration stating the loss.

Article 5.—The Chinese Government denies itself the right, before the date fixed for the first amortization, to fix a larger amortization, or to refund the whole loan or to convert it. After that date it shall be free to refund the loan at whatsoever time it chooses before the dates of payment, and, the refunding made, all contracts shall be declared annulled.

Article 6.—Coupons and bonds shall be paid off in francs in the office or offices entrusted with the management of the loan.

Article 7.—Interest payment and the reimbursement of the bonds provided for in the present loan shall be guaranteed by the gross revenues of the Imperial Chinese Government.

Furthermore, in virtue of the authorization, already granted by the Chinese Government, and in accord with it, the Imperial Chinese Railway Company declares that it makes a preferential assignment in favor of the payment of interest and of the capital of the present loan, and that it cedes and assigns in favor of said obligations all the net receipts of the line from Kai-feng Fu to Ho-nan Fu, after the regular payment of all expenses of management and operating, the whole as elsewhere indicated in an operating treaty concluded between the Imperial Chinese Railway Company and the Compagnie Générale de Chemins de Fer et de Tramways en Chine, said treaty being annexed to and forming an integral part of the present contract. This assignment is made exclusively and irrevocably until complete redemption of the bonds of the present contract.

Article 8.—After auditing and noting the net receipts the Imperial Chinese Railway Company shall direct the Compagnie Générale de Chemins de Fer et de Tramways en Chine to deposit these funds in a bank to be chosen by common consent. This bank shall convert into gold, in accordance with the provisions stipulated in the contract made between the Bank, the Imperial Chinese Railway Company, and the Compagnie Générale de Chemins de Fer et de Tramways en Chine, and to the best advantage of the Imperial Chinese Railway Company, the sums paid it, and up to the full amount needed to ensure the service of the loan at the next semi-annual payment.

These deposits shall continue to be made until the sum needed for the integral service of the loan on the following date of payment has been realized in gold, and in such manner that said service is ensured at least three months before the date of the semi-annual payment.

The bank designated for the receipt of these sums shall use them to the best advantage of the Imperial Chinese Railway Company. The account in which these sums shall be carried shall be charged twenty days before the date of payment with the sums needed or the service of the loan, interest, amortization, money expenses, difference of exchange, and the commissions provided for by the present contract.

Article 9.—The bank in which shall be deposited the loan funds shall have the right without further authorization to levy on said funds on deposit the amount of the coupons to be paid during the construction period; but it shall advise the Director-General as these payments are made.

Article 10.—To ensure the guarantee just given to the bonds of the present contract, the Imperial Chinese Railway Company grants these bonds a special first-class guarantee on the railway from Kai-feng Fu to Ho-nan Fu, on its fixed and rolling stock and its receipts.

The special assignment is accepted in the name of the bondholders by the Compagnie Générale de Chemins de Fer et de Tramways en Chine. In case of non-fulfilment of the obligations assumed by the Imperial Chinese Railway Company in the present contract, the Compagnie Générale de Chemins de Fer et de Tramways en Chine shall have full power to take such action against said property as may result from this special assignment, and in that case the provisions of the operating treaty hereto annexed must always be strictly observed.

Article 11.—The preceding provisions do not conflict with the personal responsibility of the Chinese Government concerning the present loan, as said responsibility is specified in Article 7.

Consequently the Imperial Chinese Government pledges itself to make up the sum necessary for the service of the loan in gold, in case the sums derived from the net revenues of the line from Kai-feng Fu to Ho-nan Fu, and paid in by the Compagnie Générale de Chemins de Fer et de Tramway, en Chine, entrusted with this management by the Imperial Chinese Railway Company, to the bank chosen, should not produce after conversion into gold, and three months before the date of the following semi-annual payment, an amount sufficient to ensure said service.

In the case, and on demand made it, the Imperial Chinese Government shall be bound to put at the disposal of the Compagnie Générale de Chemins de Fer et de Tramways en Chine sixty days before the following semi-annual payment falls due, in gold or in securities of sufficient amount to produce it in gold, the sum stated to it as being needed to make up said service.

Article 12.—From the sums derived from the deposits by the Compagnie Générale de Chemins de Fer et de Tramways en Chine, entrusted with that duty by the Imperial Chinese Railway Company, or from the supplementary sums paid by the Chinese Government, the Compagnie Générale de Chemins de Fer et de Tramways en Chine shall, in proper season, place at the disposal of the firms entrusted with the management of the loan the amounts necessary therefor according to the needs as determined during the preceding half-year.

Article 13.—The Imperial Chinese Government will pay to the firm entrusted with the management of the loan a commission of ¼ per cent., that is to say 25 francs for 10,000 francs on the amount of the coupons paid, and a commission of ¼ per cent. on the amount of bonds drawn by lots or redeemed under anticipated refundings. The amount of this allowance shall be settled every six months; and, in case of insufficiency, it will be paid at once by the Imperial Chinese Government.

Article 14.—The Imperial Chinese Government binds itself to respect and cause to be respected the privilege provided for in favor of the bonds under Article 9 of the present conventions, and to hold free of all Chinese taxa-

tions whatsoever the bonds and coupons as well as all operations whatsoever connected with the management (service) of the loan. The preceding (provision) concerns the bonds and coupons of the loan and the operations relating to the management of the loan, and which shall be exempt from all taxation. But the taxes now in force in China, such as land rent and the taxes which the Chinese Government may impose hereafter, such as a stamp tax levied on the general commerce of China, the railway provided for in the present contract, and its traffic shall bear them. It being understood that no exceptional law shall be passed for the railway in question, and that the rule which shall be applied to it shall be that of all Chinese railways.

Article 15.—Coupons which have not been presented for cashing within five years after the date on which they fall due shall be lost by limitation (*prescripts*) in favor of the Imperial Chinese Government. The limit of time shall be of thirty years in case of redeemed bonds.

On the death of any bondholder of the present loan, the bonds shall be transferred and shall belong to the heirs, in conformity with the inheritance laws in force in the country of the bondholder.

Payment of coupons and refunding of bonds shall take place in time of peace and in time of war to the holders, whether they be subjects of friendly states or of hostile ones. In case of loss, theft, or destruction of bonds of the present loan, the Imperial Chinese Government will authorize the Compagnie Générale de Chemins de Fer et de Tramways en Chine to replace the bonds by new ones at its own expense, whenever it shall have satisfactory evidence of the loss or destruction of the bonds and title deeds (*des titres et des droits*) of the claimants.

Article 16.—The Imperial Chinese Government, through its representatives, shall at once take steps and shall furnish the necessary documents to secure the official listing (of the bonds) in the Bourses of the capitals of Europe.

Article 17.—The whole amount of the present loan, amounting to twenty-five millions of francs, represented by 500,000 bonds of 500 francs each, possession to be had from the date of payment, is bought outright (*pris ferme*) by the Compagnie Générale de Chemins de Fer et de Tramways en Chine, at the price of 90 per cent., that is for the sum of twenty-two millions five hundred thousand francs.

If on the date of issue the bonds for the loan for the Hankow-Peking Railway should be quoted below 482.50 francs inclusive of the interest payable (*en tenant compte de la jouissance*) the two contracting parties would have the right to cancel the present contract.

Article 18.—The Compagnie Générale de Chemins de Fer et de Tramways en Chine will deposit the full amount of the proceeds of this purchase in the banks designated by it after agreement with the Director-General of the Imperial Chinese Railway Company, on delivery of the 50,000 bonds bought outright (*achetées fermes.*)

The sum needed for the building of a fixed length of line shall be transferred to Shanghai, and deposited in such bank as is mutually agreed upon.

This bank shall convert into taels the sum in accordance with the instructions of the Director-General of the Imperial Chinese Railway Company. A sum on the available proceeds of the loan, at least one-tenth of the proceeds of the conversion into taels, shall be deposited in a bank in China, to be chosen by the Director-General of the Imperial Chinese Railway Company, and under his sole responsibility, and this deposit shall be applied to expenses at such times as the rates for the conversion of European values into taels may be unfavorable. It being well understood that the depository establishments shall only be required to deliver these sums under the conditions and limitations mentioned in Article 20 here below

Article 19.—The construction work for the whole of the line shall be under the direction of the Chief Engineer chosen by the Compagnie Générale de Chemins de Fer et de Tramways en Chine, entrusted with this work by the Imperial Chinese Railway Company and for its account.

The Chief Engineer shall prepare all studies, plans, tracings, estimates for the whole of the line; he shall direct the carrying out of all works and shall order the materials, tools, and supplies necessary to ensure the regular working of the line. Nevertheless all these operations must be submitted for the approval of the Director-General of the Imperial Chinese Railway Company.

As the line from Kai-feng Fu to Ho-nan Fu is a feeder (*confluent*) of the Luhan, the width of the rails and the general methods of operating must be the same as on the Luhan.

With the exception of the supplies of material and the expenses of all kinds duly authorized by an act signed by the Director-General of the Imperial Chinese Railway Company, and paid at Brussels, the Imperial Chinese Railway Company shall place at the disposal of the Compagnie Générale de Chemins de Fer et de Tramways en Chine, from the proceeds of the loan, the sums necessary to make, without any exceptions, all necessary payments for the carrying out of the works, the salaries of the staff under its orders, and in general for all expenses of whatsoever kind. But these payments must always be previously approved by the representatives of the Director-General.

After the signing of the present contract the Imperial Chinese Railway Company directs the Compagnie Générale de Chemins de Fer et de Tramways en Chine to choose an Engineer with experience in construction work, who shall direct the construction of the line and prepare studies, plans, tracings, and specifications for the whole line, and the whole shall be submitted for the approval of the Director-General of the Imperial Chinese Railway Company. Said Chief Engineer shall be appointed, on recommendation of the Compagnie Générale de Chemins de Fer et de Tramways en Chine, by the Director-General of the Imperial Chinese Railway Company, to whom he is directly responsible.

The Director-General of Chinese Railways shall fix the amount of his salary, after agreement with the Compagnie Générale de Chemins de Fer et de Tramways en Chine.

The Chief Engineer shall prepare a tabulated plan of the European staff necessary for the building, and shall submit it for the approval of the Director-General of the Imperial Chinese Railway Company. This staff shall be engaged by the Compagnie Générale de Chemins de Fer et de Tramways en Chine, which shall put it under the order of the Chief Engineer.

As regards the Chinese staff, whether technical or other, the Director-General of the Imperial Chinese Railway Company reserves to himself the right to choose it, and to put it under the orders of the Chief Engineer. No Chinese or European employee shall be engaged without the assent of the Director-General of the Imperial Chinese Railway Company. It is understood that Chinese subjects who have made special studies, or who have acquired sufficient practical knowledge, may be presented by the Director-General of the Imperial Chinese Railway Company to the Chief Engineer, who shall employ them on the works under the same conditions as European employees. As to the technical service, the Chinese staff as well as the European staff shall be under the direct orders of the Chief Engineer. But the Director-General reserves the right to demand the instant dismissal of any agent of whatever nationality on condition that the demand for dismissal is based on serious reasons.

The Director-General likewise reserves the right to depute on the works a special representative with full powers. The salary of said representative, as also the running expenses of the head office at Shanghai, shall devolve on the Kai-feng Fu to Ho-nan Fu railway concern.

Orders for materials, tools, and furniture for the construction of the line, and for its orderly working, shall be submitted through the Chief Engineer to the Director-General for approval.

Orders as well as contracts for work shall be drawn up, after mutual agreement, by the Chief Engineer and the representative of the Director-General.

Statements of the sums paid for supplies of materials and expenditures of every description settled in Europe shall be sent with all vouchers and explanatory documents to the Imperial Chinese Railway Company every three months.

Every month the Chief Engineer, in agreement with the Imperial Chinese Railway Company, shall request the bank in which are deposited the loan funds, to pay the amount necessary for the general expenses of the undertaking during the month following, to an agent chosen by the Director-General of the Imperial Chinese Railway, and against receipt duly signed by the latter and under the responsibility of the Director-General of the Imperial Chinese Railway Company. This agent shall not surrender any of the funds except under the signature of both the Chief Engineer and the representative of the Director General.

The Compagnie Générale de Chemins de Fer et de Tramways en Chine shall not therefore be obliged to meet any expense for the building out of its own money.

Said Company shall endeavour to finish the work on the line within two years from the date on which the railway from Hankow to Peking shall be opened to traffic as far as the Yellow River, because materials will then be easily transported.

It is well understood that the Imperial Chinese Railway Company will not pay the expenses of the office in Brussels, except the necessary expenses for the studies, orders, receipt of materials, living of staff; consequently the personal expenses of the directors, allowances (indemnities), etc. will continue to be chargeable to the Compagnie Générale de Chemins de Fer et de Tramways en Chine.

Article 20.—The price paid for the above mentioned bonds being exclusively assigned to the building of the railway from Kai-feng Fu to Ho-nan Fu, the Compagnie Générale de Chemins de Fer et de Tramways en Chine, or the bank having received the deposits, would have the right not to give up these funds in case one of the deposits should not have been applied as provided for, and also in case the delegates of the Compagnie Générale de Chemins de Fer et de Tramways en Chine were not enabled by the Imperial Chinese Railway Company to continue the direction of the construction works.

The balance on hand, if any should exist after the completion of the works, shall be held subject to the order of the Imperial Chinese Railway Company. After the completion of the works and the organization of traffic, if the funds of the issue should still show a (credit) balance, said balance shall be paid in full to the Imperial Chinese Railway Company, who shall remit it to the Chinese Government.

If the loan provided for in the present contract should not be enough to finish the line or to organize traffic, the Compagnie Générale de Chemins de Fer et de Tramways en Chine is authorized by the present (contract) to make a further loan on the same terms as in the present contract without being obliged to make a new contract.

Article 21.—Within nine months following the date of the signing of the present contract, the Compagnie Générale de Chemins de Fer et de Tramways en Chine shall buy outright from the 50,000 bonds a first lot for 12,500,000 francs at the price of 90 per cent. for the purpose of building the first portion of the line. The balance of the issue, or 12,500,000 francs, for the building of the second section of the line, shall be taken at the same price and in one or two instalments by (public) subscription or otherwise. But it remains well understood that the expense of issuing the loan falls on the Compagnie Générale de Chemins de Fer et de Tramways en Chine.

If the Compagnie Générale de Chemins de Fer et de Tramways en Chine should begin simultaneously the building of both sections of the road on either side of the Luhan line, it shall have the right to make but one issue for the whole loan.

Article 22.—Preliminary studies of the line after the signing of the present contract are at the expense of the Imperial Chinese Railway Company, and are to be provided for out of

the loan funds. Said studies of the line shall be provided for from the revenues derived from the loan, and they shall begin on the section running from Kai-feng Fu to the junction with the Hankow-Peking line. They shall afterwards be made over the other sections. From the Luhan junction to Ho-nan Fu will constitute the second section.

The proceeds from the first purchase of bonds shall be applied to the building of the portion of line from Kai-feng Fu to the Luhan junction.

The preliminary studies shall begin within nine months from the date of signing the present contract.

The Compagnie Générale de Chemins de Fer de Tramways en Chine shall deposit one million francs to the order of the Imperial Chinese Railway Company. This sum is considered as an advance on the loan for the railway from Kai-feng Fu to Ho-nan Fu and is to be specially devoted to expenses for study of the line.

The depository bank shall not surrender this sum except in accordance with the provisions of Article 20 of the present contract.

This advance shall produce an annual 6 per cent. interest without rate of issue, but it shall be refunded with the proceeds of the first sale of 12,500,000 francs, which must be issued within nine months from the signing of the present contract; a portion of the proceeds of this sale will be issued to refund the advance first made.

Article 23.—Should the Compagnie Générale de Chemins de Fer et de Tramways en Chine finish satisfactorily the work for the railway from Kai-feng Fu to Ho-nan Fu, complying strictly with all the provisions of the present contract, and should the Chinese Government decide to extend the railway from Ho-nan Fu to Si-ngan Fu, the Director-General of the Imperial Chinese Railway Company agrees to come to an understanding preferably with, and to grant an option for the loan necessary for said undertaking to, the Compagnie Générale de Chemins de Fer et de Tramways en Chine in conformity with the provisions and conditions of the present contract.

Article 24.—The present contract shall only be binding on the Compagnie Générale de Chemins de Fer et de Tramways en Chine if it is assumed that, exclusive of what may be furnished and produced in China, and bought at the same prices as the European product delivered in China, the total amount of materials and supplies necessary for the building and operating of the railway from Kai-feng Fu to Ho-nan Fu will be asked of and ordered from the Compagnie Générale de Chemins de Fer et de Tramways en Chine, which will fill these orders under the best possible terms.

The carrying out of this provision of this contract by the Imperial Chinese Railway Company will be proven by the orders for materials for each of the sections of line undertaken.

Orders from the Compagnie Générale de Chemins de Fer et de Tramways en Chine will be free from all duties or from likin on importation or in transit across Chinese territory.

If proof of the granting of this franchise is not forthcoming before the end of the month following the date on which the Belgian Government should inform the Compagnie Générale de Chemins de Fer et de Tramways en Chine that it has received notification concerning Article 28, said Company reserves the right not to consider itself bound.

It reserves the same right if extraordinary events should take place, such as a war, or if there were absolute impossibility to secure subscribers for the bonds.

Should on its side the Compagnie Générale de Chemins de Fer et de Tramways en Chine not fulfil within the given delays the obligations it has assumed by the present contract, it shall become annulled. The Imperial Chinese Railway Company would be at liberty to enter into contract with whosoever it chose, and to give up the service of the Chief Engineer.

It is expressly agreed that the works and mines under the control of H. E. Sheng Kung Pao shall have a preferential right for all orders necessary for the building and operating of the railway which is the object of the present contract. The word preference applies to equality of specifications and prices, including transportation, as if the orders had to be filled abroad and delivered in China.

All orders made in China shall be free of duties and of likin on Chinese territory.

Article 25.—In case of disagreement between the Compagnie Générale de Chemins de Fer et de Tramways en Chine or its delegates and the Imperial Chinese Government or the Imperial Chinese Railway Company, such conflicts or disagreements shall be settled by the decision of a member of the Ministry of Foreign Affairs and the Minister of Belgium in China. In case of non-agreement the third arbitrator shall be the Dean of the Diplomatic Body at Peking.

Article 26.—Should the Minister of Belgium request the Chinese Minister of Foreign Affairs, the latter shall be bound to give cognizance of the title (*notifier le titre*) to the Minister of the foreign country mentioned to him as subscribing to the issue of bonds. The present contract is drawn up in triplicate, one copy for the Chinese Government, one for the Imperial Chinese Railway Company, and the third for the Compagnie Générale de Chemins de Fer et de Tramways en Chine.

In case of doubt or disagreement, the French text alone shall be authoritative in interpreting the present contract.

The present contract shall be submitted through the proper channel for the Imperial Sanction, and when that shall have been obtained, the Minister of Foreign Affairs shall notify, by official despatch, the Representative of Belgium at Peking, and in case of necessity, the Representative at Peking of the foreign country to whom the title shall be notified.

Article 28.—The Compagnie Générale de Chemins de Fer et de Tramways en Chine has been organized at Brussels the 26th March, 1900, under Belgian law (*régime belge*) and with Belgian capital.

The Imperial Chinese Railway Company only recognizes for the purposes of the present contract the above-mentioned contracting Belgian Company, which shall never have the right to transfer the present contract to other nations nor to persons of another nationality than Belgian.

Article 29.—The present contract includes the right to build little branch lines from the line from Kai-feng Fu to Ho-nan Fu for the purpose of securing traffic and establishing useful relations. These branch lines shall only be built after agreement with the Director-General and the Governor of Ho-nan and in accordance with plans approved by them.

RUSSIA

AGREEMENT BETWEEN THE CHINESE GOVERNMENT AND THE RUSSO-CHINESE BANK FOR THE CONSTRUCTION AND MANAGEMENT OF THE CHINESE EASTERN RAILWAY.

Imperial sanction received by the Chinese Envoy to Russia, Hsu, dated 29th August, 1896. *Agreement signed 8th September,* 1896.

1.—China and Russia establish a Company, to be called the Chinese Eastern Railway Co., to construct and manage this railway. The seal to be used by the Company will be issued by the Chinese Government. The regulations of the Company will be in conformity with those of Russian Railway Companies. Shares may only be bought by Chinese and Russians. The Director of the Company will be appointed by China. His remuneration will be provided for by the Company. He may live in Peking. His duty will be to supervise the task delegated to the Company by China, and to ascertain whether its obligations are faithfully performed. All business between the Company and the Chinese Government or any Chinese officials, either in Peking or the provinces, will also be managed by the Director. The Director will also investigate from time to time the accounts of the Company with the Chinese Government. An agent must be stationed in Peking for convenience of consultation.

2.—For the purpose of surveying the course of the railway, the Chinese Director will depute an officer to act in conjunction with the Company's Engineer and the local officials along the line of route, who will arrange matters satisfactorily. Measures must be taken to pass round all houses, graves, villages, and towns on the course of the railway.

3.—Within twelve months of the issue of an Imperial Edict sanctioning this Agreement the Company must have commenced work on the railway; and within six years from the date of the completion of the survey for the line and the handing over to the Company of the necessary land the whole line must be completed. The gauge of the line must be that of the Russian Railway, *i. e.*, 5 Russian feet, equivalent to 42½ Chinese inches.

4.—The Chinese Government will order all local officials concerned to do their utmost to assist the Company in regard to all material required for the construction of the railway, in engaging laborers and boats, carts, men, and horses for transport purposes, and in the purchase of grain and fodder. All these must be paid for by the Company at market rates. The Chinese Government will also afford facilities for transport.

5.—The Chinese Government will take measures for the protection of the line and of the men employed thereon. The staff, Chinese and foreign, necessary for the line will be engaged as required by the Company. All crimes and lawsuits arising on the land of the Company will be dealt with by the local officials in accordance with Treaty.

6.—As regards the land required by the Company for constructing, managing, and protecting the line and adjacent land, for procuring sand, earth, stones, and lime, if the land be Government land it will be given the Company without payment. If privately owned, the Company will provide funds for payment to the proprietors at market rates, either in one payment or as yearly rent. All the Company's land will be exempted from land tax. As soon as the land comes under the management of the Company, they may erect thereon any buildings and carry on all kinds of work, and they may establish a telegraph line thereon worked by the Company for the Company's use. With the exception of mines, for which special arrangements must be made, all receipts of the Company for transport of passengers and freight telegrams, etc., will be exempt from all taxation.

7.—All materials required by the Company for the construction and repair of the line will be exempt from taxation.

8.—All Russian troops, naval or military, and munitions of war, moved by the Russian Government by this railway, must be conveyed by the Company directly across the border. Apart from slight detentions *en route*, incidental to transfers, no other delays will be permitted for any cause.

9.—Any foreign passengers by this line who may proceed into the interior away from the railway must be provided with Chinese passports authorising them to proceed. Any person unprovided with such passports must be forbidden by the Company to proceed into the interior.

10.—All goods and baggage coming from Russian territory, and again entering Russian territory by this line, will be exempt from taxation, but such goods and baggage, with the exception of personal luggage with passengers, must be carried by the Company in special vans,

and sealed by the Customs officers on entering Chinese territory, and on leaving Chinese territory they must be examined by the Customs officers to ascertain that the seals are intact, in which case they will be allowed to pass. If it be found that the seals have been opened *en route* the goods will be confiscated.

As to goods conveyed by this line from Russia to China or from China to Russia, they will pay duty according to the Treaty tariff, *i. e.* an import or export duty, as the case may be, but subject to a reduction of ½ of the tariff rate. If such goods be conveyed to the interior they must pay transit duty in addition, *i. e.* half the amount of the duty already paid. Transit duty being paid, they are not to be taxed again on passing Customs stations or likin barriers. But if transit duty be not paid, they must pay duty at stations and at likin barriers. China must establish Customs stations at the two points where the line crosses the frontier.

11.—Fares for passengers, freight for goods, and charges for loading or unloading will be fixed by the Company. Chinese Government despatches and letters must be carried by the Company free of cost. Chinese troops and munitions of war will be carried at half rates.

12.—From the day of completion of the railway and the commencement of traffic, for a period of eighty years, all profits made by the line shall belong to the Company solely. Any loss must likewise be borne by it; the Chinese Government cannot be responsible. After eighty years the line and all its property are to revert to the Chinese Government without payment.

Thirty-six years after commencement of traffic China may take over the line on payment of the following and all capital and all moneys owed on account of the line and interest. As to profits made by the Company, should there be any not distributed to shareholders, these must be taken to be capital returned and deducted from the price paid for the line. China must actually pay over the amount of purchase to Russia before receiving possession of the line.

On the day the line is completed and traffic commenced, the Company will pay the Chinese Government five million Treasury taels.

PRELIMINARY AGREEMENT AND CONTRACTS CONCERNING THE CHENGTING-TAIYUAN (CHENG-TAI) RAILWAY, 1898-1903.

(1) DRAFT OF AGREEMENT BETWEEN FANG, SUPERINTENDENT OF THE LIU-LIN-TAIYUAN RAILWAY CO. (UNDERSTOOD TO BE ACTING UNDER AUTHORITY FROM THE GOVERNOR OF SHANSI) AND POKOTILOW, DIRECTOR OF THE RUSSO-CHINESE BANK, FOR THE PROVISION OF A LOAN TO CONSTRUCT A RAILWAY FROM LIU-LIN (I. E. CHENGTING, A POINT ON THE PEKING-HANKOW LINE TO THE SOUTH OF THE HU-TO RIVER) TO TAI-YUAN-FU IN SHANSI.

The line is to run from Chengting to the coal mines on the Wei-shui river to the north of Pingting, and thence to Taiyuan. The cost—including "official profits" (kuan-li)—is estimated at Tls. 6,800,000. As it is impossible to raise this amount in China, Fang agrees to accept a temporary advance form the Russo-Chinese Bank on the following terms:

1. A Company will be formed to construct the railway, and the Company will borrow Tls. 6,800,000 necessary from the Bank. Interest 6 per cent from the date of advance.

2. The exact amount required will be determined after the completion of the surveys and estimates.

Until the railway is opened to traffic the interest will accrue, and be added to the principal of the loan. Should the traffic receipts during the two years following the opening be insufficient to pay the interest the deficiency will also be added to the loan capital. At the close of these two years, all the moneys owing to the bank by the Company on principal and interest must be reckoned up and interest paid on the full amount at 6 per cent per annum. All surplus profits, excluding "official profits" (kuan-li) made within five years from the opening of the railway to be deposited in the Bank, the amount to go to the redemption of the loan at the end of the five years. The Bank to pay 4 per cent on the amounts so deposited.

Dating from the sixth year after the opening of the line the Company agree to pay off the interest and principal due to the Bank by quarterly instalments, extending over 25 years; such instalments to be paid in gold at current rates.

3. The Company may at will redeem the loan before the limit of the time specified.

The Company may issue share certificates to the amount of the loan, which are to be deposited with the Bank as security. Within the 25 years' limit certificates to the amounts redeemed from year to year will be handed over to the Company by the Bank. If, before the loan is redeemed, the Chinese public consider these shares a good investment, the Company may purchase them from the Bank and issue them a a premium of 20 per cent.

Should the Company redeem the debt due to the Bank in either of the two ways stated above, the Bank will have no further concern with the railway.

4. The Bank will decide in consultation with the Company all questions of route gauge, position of stations, amount of rolling stock, etc. All the construction and works will be executed under the supervision of the Company.

The Bank engages to use local materials and labor as far as possible, and in any case to spend the greater part of the loan on the spot. As little material as possible is to be procured from abroad, but whatever is thus obtained must come from Russian or French territory. All such materials are to be purchased by the Bank at the most reasonable prices, and questions as to the reasonableness of the prices are to be settled by reference by the Company to the Chinese Ministers in Russia and France.

5. During the whole 30 years or-and while the loan is unredeemed, the high authorities of Shansi shall, at the request of the Company, interdict the construction of another railway or other mechanical means of transport between Liu-lin and Taiyuan-fu, as such would be detrimental to the interests of this railway.

6. The Company will see to the acquisition of the land required for the railway in accordance with the provisions of Chinese law. The regulations for the purchase of the land will be drawn up by the Company and approved by the Governor of Shansi who will be requested to instruct the local authorities to surrender or let whatever Government land is required for the railway line. As to private ground, graves, bridges, rivers, and roads, the regulations of the Tientsin railways will be followed, and reasonable compensation will be awarded. The local officials are to lend every assistance and to check disorder. In other matters the established precedents ruling in the railways already opened to traffic in Chihli are to be followed.

The price of the ground will be arranged by the Company with the owner, and the money handed over in the presence of a representative at the Bank specially appointed for that purpose. This will prevent irregularities.

The Bank will prepare detailed plans of the railway and send them to the Company, and the Company are given six months from the date of receipt of the plans within which to secure the land required for the track.

7. The Governor of Shansi will be moved to exempt from likin charges all railway material. Import and transit dues paid to the Imperial Maritime Customs are not included in this exemption.

8. The administration of the railway will rest with the Company. Mr. Fang will procure the assistance he needs, and from the date of the approval of this agreement Tls. 10,000 a year will be advanced to him to cover the salaries of himself and assistants.

Before the opening of the railway and traffic these salaries will be advanced by the Bank and the amounts will be added to the loan accounts. After the opening they will be paid out of receipts by the Company. If there is a surplus after the payment of all expenses out of the receipts, it will rest with the Company to decide whether the remuneration above mentioned shall be increased. The Foreign Agent of the Bank will be present at all meetings of the Managing Officers and will exercise supervision over all matters of accounts, machinery, etc.

9. The Foreign Agent will be specially appointed by the Bank after the completion of the railway to inspect the accounts, receipts, and expenditure. The accounts will be kept after foreign methods. He will also inspect the permanent way, machinery, stations, etc., and see that they are kept in good working order, and free from dilapidations. He will have foreign assistants, but their number will be kept as low as possible. The salaries of the Agent and his staff, which are not to exceed 100,000 francs or say Tls. 30,000 a year, will be paid by the Company. With these exceptions the personnel will be Chinese. As a temporary arrangement, however, China not possessing capable machinists, foreign artificers will be engaged by the Bank to work the machinery, but as soon as Chinese are available for this purpose the foreigners will be sent home. It is fully expected that Chinese will be employed as machinists before many years are over, and to attain this end the Superintendent is at liberty to establish engineering and mining schools near at hand, and to engage foreign instructors to teach 10 to 20 selected Chinese youths of capacity who may also be sent abroad to complete their knowledge.

The Board will assist the Company as far as possible in its efforts to dispense with foreign assistance and to secure capable Chinese machinists without delay.

10. After the completion of the railway the yearly surplus, if any, left after payment of working expenses and "official profits," is to be dealt with as follows:

5-10ths to the Company. Should this 5-10ths amount to 30,000 taels or over, the Superintendent's salary will be paid out of it; if the 5-10ths do not amount to Tls. 30,000 the salary will form part of the working expenses.

2.10ths to the State.

1-10th to the Trade Bureau to be used for public purposes, and 2-10ths to the Bank—this payment to cease at the end of 30 years from the opening of the line. Should the Company be able to redeem the loan before this limit of time as provided for under Article 3, the Bank's 2-10ths will cease with such redemption.

11. The Bank will first undertake the construction of the first section to the coal mines of Ping-ting; this to be completed within 3 years from the acquisition of the ground required, according to the plans. This section finished, the Bank engages to begin work on the 2nd section from the coal mines to Taiyuan Fu within two years. If it fails to do so the Company is free to discharge the Bank from the contract and hand the work over to others to undertake. The Bank, in this case, is to hand over the surveys, estimates, and other documents relating to the 2nd section to the Company without payment therefor and without objection to the Company's action.

12. In case of default in the payment of principal and interest, the administration of the railway will pass temporarily into the hands of the Bank, but the Company will continue its supervision. The Superintendent, etc., will continue to meet and consult as before and the salaries will continue to be advanced in the manner stated in Article 8. The Bank will not under these circumstances be considered as entering into possession of the railway; it will simply administer on behalf of the Company until the loan and interest are paid in full, when the administration will be returned to the Company.

13. Superintendent Fang will move the local authorities to permit the Company, through the Trade Bureau, to select a few coal and iron mines in the country adjoining the railways;

places granted to other persons being excluded from the selection.

Within a year from the approval of this agreement the Bank will indicate a few coal and iron mines which it will be able to work as soon as the necessary authorization is received from the Governor of Shansi through the Trade Bureau. But the number of mines thus selected must not exceed four or five.

Superintendent Fang will also be authorised to choose a convenient site for glass works, the funds for the establishment of which will be provided by the Bank.

The financial terms relating to the mines and glass works will follow the same lines as those relating to the railway; 2-10ths of the surplus after payment of working expenses and "official profits" will go to the Bank in payment of principal and interest. In case of default the management of all the mines and the glass-works will revert to the Bank who will retain it until the loans and interest are redeemed.

14. This loan being a commercial arrangement made between Russian and Chinese merchants, it is understood that the Governments of China and Russia are in no way concerned.

15. This instrument is only preliminary. When it has been aproved by the Governor of Shansi and authorised by the Emperor, it will as it stands become definite.

(2) LOAN AND OPERATING CONTRACTS FOR THE CHENG-TING AND TAI-YUAN RAILWAY.

Extracts.

(*Translation*).

LOAN CONTRACT

Between the undersigned:

(1) The Imperial Chinese Railway Company, represented by H. E. Sheng Hsuan-huai, its Director General, duly empowered by the Chinese Government;

(2) The Russo-Chinese Bank, represented by Mr. C. R. Wehrung, one of its directors, with full powers, acting for said Bank;

It has been agreed as follows:

ARTICLE 1.

Under the terms of the Imperial Edict of July 8, 1897, and May 17, 1898, i. e., 9th day, 6th moon, 23rd year, and the 24th day, 3rd moon, 24th year of the reign of H. M. Kuang-hsu, the Governor and the Director of the Commercial Bank of Shansi were authorised to sign a loan contract with the Russo-Chinese Bank for the building of a railway from Cheng-ting Fu to Tai-yuan Fu.

This line, having a length of about 250 kilometers, forms a natural branch of the Hankow-Peking line; consequently the Governor of Shansi, in a report dated June 25, 1902, i. e. 18th day, 5th moon, 28th year of the reign of H. M. Kuang-hsu, proposed to the Chinese Government to instruct the Director of the Imperial Chinese Railway Company to personally take up the matter.

The recommendation was approved, and H. E. Sheng Hsuan-huai, Director General of the Imperial Chinese Railway Company, received instructions from the Chinese Government, in virtue of a Decree of September 7, 1902, i. e. 6th day, 7th moon, 28th year of the reign of H. M. Kuang-hsu, as a consequence of a joint report presented by the Wai-wu-pu and the Central Bureau of Mines and Railways, to negotiate a new loan contract for said railway with the Russo-Chinese Bank. Before signing the present contract, H. E. Sheng Hsuan-huai has submitted it for ratification by the Chinese Government which has ratified it by a Decree of ..... of which a copy is annexed to the present contract (Annex No. 1.)

Under the terms of this Edict H. E. Sheng-Hsuan-huai has decided to make a State foreign 5% gold loan, of a nominal value of 40,000,000 francs.

This loan will be known as the Chinese 5% 1902 Loan.

It is understood that the present contract, after being signed, shall annul all preceding contracts relating to the railway from Cheng-ting Fu to Tai-yuan Fu, signed by the Governor of Shansi, in favor of the Russo-Chinese Bank.

ARTICLE II.

This loan shall be represented by 80,000 bonds of 500 francs gold. These bonds, the text of which is annexed (Annex No. 2) to the present contract, shall be signed in the name of the Chinese Government by the Minister plenipotentiary of China at Paris, duly advised by his Government.

They shall be issued in fractional bonds (coupures) of from 1 to 5 bonds, in such proportion as the Russo-Chinese Bank shall state and shall be made at the expense of the latter.

They shall bear 5% interest a year on the nominal capital, payable in gold. Interest shall run from the day of payment of instalments (du jour des versements) and shall be payable the 1st September and the 1st March of each year.

Matured and paid coupons shall be classed in numeric order, by the Russo-Chinese Bank and at its expense.

(Articles III, IV, V, VI, VII, VIII, IX, X, XI, XII, and XIII are mutatis mutandis, the same as the articles bearing the same numbers in Document No. 58 infra).

ARTICLE XIV.

(Same as Art. XIV in No. 58 with exception of last two phrases of latter which are here omitted).

ARTICLE XV.

(Same as Art. XV in No. 58).

ARTICLE XVI.

(Same as Art. XVI in No. 58 with the words "Bourses of Petersburg and of Paris" instead of "Bourses of the capitals of Europe."

ARTICLE XVII.

Of the whole amount of the present loan, amounting to a nominal capital of 40,000,000 francs, the Russo-Chinese Bank buys outright 22,000,000 francs of nominal capital, or 44,000 bonds of 500 francs, delivery to date from payment to the Agency of the Russo-Chinese Bank at Paris, at the price of 90%, that is to say for the total sum of 19,800,000 francs.

ARTICLE XVIII.

(Substantially the same as Art. XVIII, in No. 58).

ARTICLE XIX.

(Same as Art. XIX in No. 58, with omission of first five and the last paragraphs. Last paragraph reads: "It (the Russo-Chinese Bank) will endeavor to finish the work on the line within a term of three years."

ARTICLE XX.

(Substantially the same as Art. XX in No. 58).

ARTICLE XXI.

The Chinese Government gives the Russo-Chinese Bank an option to December 31, 1905, to purchase the balance of the loan, or 18,000,000 francs, and at the price of 90% of par value.

Said option may be availed of at one or several times, regardless of the amortizations made. Delivery of the bonds taken on the options will be made at the Russo-Chinese Bank in Paris, which will only surrender them under the conditions and terms provided for in the above Article XX.

ARTICLE XXII.

If the Russo-Chinese Bank should avail itself of the right given it to purchase all or a portion of the securities for which it has an option granted it, it shall come to an agreement in each case with the Imperial Chinese Railway Company to determine the section (of line) to be built with the new funds.

ARTICLE XXIII.

Studies for the line, dating from the signing of the present contract, are in the expense of the Imperial Chinese Railway Company. The whole line shall be divided into two principal sections: The first from Cheng-ting Fu to P'ing-t'ing on the left bank of the Weishui River, to the north of P'ing-t'ing Chou, and the second from that point to Tai-yuan Fu.

It is hereafter to be understood that the section to be built with the funds derived from the first option, will be that from Cheng-ting Fu to P'ing-t'ing and that studies for it will begin the first year.

Within two months from the date of ratification of the present contract, the Russo-Chinese Bank will place at the disposal of the Director-General of the Imperial Chinese Railway Company a sum of 1,000,000 francs as an advance on the proceeds of the loan.

This sum, it is understood, can only be applied to studies and construction work on the Shansi railway. The rate of interest on this advance is fixed at 6% annually, regardless of the price of issue.

The first option must be taken up within eleven months from the date of signing the present contract; the proceeds of said option shall be applied in the first place to refunding the above mentioned advance.

ARTICLE XXIV.

The Russo-Chinese Bank reserves the right to make one or more issues, by public subscription or otherwise, of the whole or a part of the bonds bought outright, or forming a part of the option; the expense of such issues to be borne, of course, by the Russo-Chinese Bank.

ARTICLE XXV.

(Substantially the same as Art. XXIV in No. 58).

ARTICLE XXVI.

(Same as Art. XXV in No. 58 except that cases of disagreement between the parties to the contract are to be settled by the Russian Minister at Peking and a member of the Chinese Foreign Office or by a judge of their choice).

ARTICLE XXVII.

(Same as first phrases of first paragraph of Art. XXVI in No. 58).

ARTICLE XXVIII

(Same as Art. XXVI, in No. 58, exclusive of first phrase).

JAPAN

SUMMARY OF SECRET PROTOCOLS TO PEKING TREATY OF DECEMBER 22D, 1905, WITH REFERENCE TO RAILWAYS.

1. The railway between Changchun and Kirin will be constructed by China with capital to be raised by herself. She, however, agrees to borrow from Japan the insufficient amount of capital, which amount being about one-half of the total sum required. The contract concerning the loan shall, in due time, be concluded, following, mutatis mutandis, the loan contract entered into between the board of the Imperial Railways of North China and the Anglo-Chinese Syndicate. The term of the loan shall be twenty-five years, redeemable in yearly installments.

2. The military railway constructed by Japan between Mukden and Hsin-min-tun shall be sold to China at a price to be fairly determined in consultation by Commissioners appointed for the purpose by the two Governments. China engages to reconstruct the line, making it her own railway, and to borrow from a Japanese corporation or corporations one-half of the capital required for the portion of the line east of Liao-ho for a term of eighteen years repayable in yearly installments, and a contract shall be concluded, for the purpose following, mutatis mutandis, the loan contract entered into between the Board of the Imperial Railways of North China and the Anglo-Chinese Syndicate.

All the other military railways in different localities shall be removed with the evacuation of the regions.

3. The Chinese Government engage, for the purpose of protecting the interest of the South Manchurian Railway, not to construct, prior to the recovery by them of the said railway, any main line in the neighborhood of and parallel to that railway, or any branch line which might be prejudicial to the interest of the above-mentioned railway.

THE HSINMINTING-MUKDEN AND KIRIN-KWANGCHENGTZE RAILWAYS.

Convention between Japan and China.

Consuke Hayashi, Envoy Extraordinary and Minister Plenipotentiary of Japan, and Na T'ung, Ch'u Hungchi and Tong Shao-i, Ministers of the Imperial Chinese Board of Foreign Affairs, having been appointed thereto by their respective Governments, have agreed upon the following articles:

1.—The Chinese Government being desirous of purchasing the Hsinminting-Mukden Railway, constructed by Japan, hereby agrees that the purchase price thereof shall be Japanese gold yen 1,660,000, to be paid through the Yokohama Specie Bank at Tientsin.

The status of this railway shall be changed by the Chinese Government to that of the lines built by China herself, and it is agreed that one-half of the capital needed for that part of the line east of the Liao River shall be borrowed from the Southern Manchurian Railway Company.

2.—The Chinese Government, being about to construct a railway line herself from Kirin to Kwangchengtze, agrees to borrow from the aforesaid Company one-half of the capital needed for this work.

3.—The conditions of the loans provided for in Articles 1 and 2, with the exception of the periods within which they are to be repayable, shall be in all respects similar to those of the Loan Contract of the railways inside and outside Shan-hai-kuan. The most important conditions are mentioned below. The regulations for the management of the railway line shall correspond with the methods at present employed by the General Office of the railway lines inside and outside Shan-hai-kuan.

(*a*) The periods within which the loans shall be repaid shall be for that of the Hsinminting-Mukden line east of the Liao River, eighteen years, and for the Kirin-Kwangchengtze line twenty-five years.

No repayment in full of these loans shall be allowed before the expiration of the periods named.

(*b*) The security for the loan from the Southern Manchurian Railway Company for that part of the Hsinmin-Mukden line east of the Liao River shall be the real property of the aforesaid section and its earnings.

The security for the mercantile shares to be issued by the Kirin-Kwangchengtze Railway Administration, as well as for the loan to be made from the Southern Manchurian Railway Company, shall be the real property of the said railway and its earnings.

So long as these loans are not repaid by the Chinese Government, the aforesaid property and earnings of the above-named lines shall not be pledged as security for any other loan.

During the periods of these loans the Chinese Government agrees that the buildings, machinery, rolling-stock and road bed of the section of the Hsinmin-Mukden Railway east of the Liao River, and of the Kirin-Kwangchegtze Railway, shall be kept in good condition, and furthermore that such additions will be made to the rolling-stock from time to time as may be regarded to satisfy the demand of the traffic.

If the Kirin-Kwangchengtze line should hereafter build branch lines or an extension, the construction of such lines shall rest of right with the Chinese Government, but if there should be a lack of capital, application shall be made to the Southern Manchurian Railway Company for an arrangement. Should China, however, appropriate funds herself for the construction of any other railway lines than those mentioned, it shall not concern the Southern Manchurian Railway Company.

(*c*) The loans and the interest thereon are guaranteed by the Chinese Government, and should there be any failure to make payment of interest or re-payment of principal at the proper periods, the Company shall at once notify the Chinese Government, which shall pay over to the Company the amount of the shortage. If the Chinese Government, after such notification by the Company, shall be unable to make good the deficit in the payments of principal or interest, the line in question with its real property shall be handed over to the temporary control of the Company until the shortage is made good, after which it will be returned to the control of the Railway Administration.

If, however, the shortage be for a small amount only, an extension of time shall be granted as an accommodation, but never for more than three months.

(*d*) During the periods of these loans the Engineer in Chief employed shall be a Japanese, and should there be an insufficient supply of Chinese for the various posts in the service of the railways, Japanese may be employed with the Chinese. If at any time it shall become necessary to change the Engineer in Chief, consultation must first be had with the (Southern Manchurian Railway) Company before appointment may be made. There shall also be appointed one Japanese Accountant, who must be thoroughly qualified, and who shall have entire responsibility for the arrangement and oversight of the various accounts of the railways, but in his supervision of receipts and expenditures he must consult and act with the Director-General.

(*e*) The railways mentioned being Chinese Government lines, the latter shall have the right to transport soldiers and subsistence over either line free of charge whenever military affairs or measures of relief shall require.

(*f*) All earnings of the railways in question must be deposited in Japanese banks. As to the terms upon which such deposits shall be made, satisfactory arrangements shall be agreed upon by the parties concerned when the loan contracts are drawn up.

4.—The Chinese Government, immediately after the purchase of the present Hsinmin-Mukden Railway, shall enter into a contract with the Southern Manchurian Railway Company for the loan in connection with that section of the line east of the Liao River, and shall also appoint and direct a Chinese engineer to consult and act with the Japanese engineer in making a survey of the Kirin-Kwangchengtze line to furnish a basis for estimating the amount of the loan needed for the construction of the line, and within six months after the completion (of the survey) shall enter into a contract with the Southern Manchurian Railway Company for the loan.

5.—The lines from Hsinmin to Mukden, and from Kirin to Kwangchengtze, under the management of China, must connect with the Southern Manchurian Railway line. The Tientsin-Shan-hai-kuan Railway Administration and the Southern Manchurian Railway Company shall appoint representatives to consult together and draw up the necessary regulations.

6.—The rate at which the loans specified in Articles 1 and 2 shall be issued, shall be determined fairly in accordance with the terms of the most recent loan negotiated by China with any foreign country.

7.—Within one month after the payment of the purchase price of the Hsinmin-Mukden Railway the Chinese Railway Administration shall appoint officers to take control of the sums.

Japanese Calendar, Meiji XLth Year, fourth Month, 15th Day.

Chinese Calendar, Kuanghsu XXXIIIrd Year, Third Moon, 3rd Day (April 15, 1907).

CONVENTION BETWEEN JAPAN AND CHINA REGARDING THE HSIN-MIN MUKDEN AND THE KIRIN-CH'ANGCH'UN RAILWAYS. SIGNED AT PEKING, APRIL 15TH, 1907. (TRANSLATED)

Gonsuke Hayashi, Envoy Extraordinary and Minister Plenipotentiary of Japan and Na-t'ung, Ch'u Hungchi, and Tong Shao-i, Ministers of the Imperial Chinese Board of Foreign Affairs, having been appointed thereto by their respective governments, have agreed upon the following articles:

1. The Chinese Government, being desirous of purchasing the Hsin-min Fu Mukden Railway, constructed by Japan, hereby agrees that the purchase price thereof shall be Japanese Gold Yen 1,660,000, to be paid through the Yokohama Specie Bank at Tientsin.

The status of this railway shall be changed by the Chinese Government to that of the lines built by China herself, and it is agreed that one-half of the capital needed for that part of the line east of the Liao River shall be borrowed from the Southern Manchurian Railway Company.

2. The Chinese Government, being about to construct a railway line herself from Kirin to Ch'ang-ch'un Fu, agrees to borrow from the aforesaid Company one-half of the capital needed for this work.

3 The conditions of the loans provided for in Articles 1 and 2, with the exception of the periods within which they are to be repayable, shall be in all respects similar to those of the loan contracts of the Railways Inside and Outside Shan-hai Kuan. The most important conditions are mentioned below. The Regulations for the management of the railway lines shall correspond with the methods at present employed by the General Office of the Railway Lines Inside and Outside Shan-hai Kuan.

(a) The periods within which the loans shall be repaid shall be for that part of the Hsin-min Mukden Line east of the Liao River 18 years, and for the Kirin-Changchun Line 25 years.

No repayment in full of these loans shall be allowed before the expiration of the periods named.

(b) The security for the loan from the Southern Manchurian Railway Company for that part of the Hsin-min Mukden Line east of the Liao River shall be the real property of the aforesaid section and its earnings.

The security for the mercantile shares to be issued by the Kirin Changchun Railway Administration as well as for the loan to be made from the Southern Manchurian Railway Company shall be the real property of the said Railway and its earnings.

So long as these loans are not repaid by the Chinese Government, the aforesaid property and earnings of the above-named lines shall not be pledged as security for any other loan.

During the periods of these loans the Chinese Government agrees that the buildings, machinery, rolling-stock, and road-bed of the section of the Hsin-min Mukden Railway east of the Liao River, and of the Kirin-Changchun Railway shall be kept in good condition, and furthermore that such additions will be made to the rolling-stock from time to time as may be required to satisfy the demands of the traffic.

If the Kirin-Changchun Line should hereafter build branch lines or an extension, the construction of such lines shall rest of right with the Chinese Government, but, if there should be a lack of capital, application shall be made to the (Southern Manchurian Railway Company for an arrangement. Should China, however, appropriate funds herself for the construction of any other railway lines than those mentioned, it shall not concern the Southern Manchurian Railway Company.

(c) The loans and the interest thereon are guaranteed by the Chinese Government, and should there be any failure to make payment of interest or re-payment of principal at the proper periods, the Company shall at once notify the Chinese Government, which shall pay over to the Company the amount of the shortage. If the Chinese Government, after such notification by the Company, shall be unable to make good the deficit in the payments of principal or interest, the line in question with its real property shall be handed over to the temporary control of the Company until the shortage is made good, after which it shall be returned to the control of the Railway Administration.

If, however, the shortage be for a small amount only, an extension of time shall be

granted as an accommodation, but never for more than three months.

(d) During the periods of these loans the Engineer-in-Chief employed shall be a Japanese and should there be an insufficient supply of Chinese for the various posts in the service of the railways, Japanese may be employed with the Chinese. If at any time it shall become necessary to change the Engineer-in-Chief, consultation must first be had with the (Southern Manchurian Railway) Company before appointment may be made. There shall also be appointed one Japanese accountant, who must be thoroughly qualified, and who shall have entire responsibility for the arrangement and over-sight of the various accounts of the railways, but in his supervision of receipts and expenditures he must consult and act with the Director General.

(e) The railways mentioned being Chinese Government lines, the latter shall have the right to transport soldiers and subsistence over either line free of charge whenever military affairs or measures of relief shall require.

(f) All earnings of the railways in question must be deposited in Japanese banks. As to the terms upon which such deposits shall be made, satisfactory arrangements shall be agreed upon by the parties concerned when the loan contracts are drawn up.

4. The Chinese Government, immediately after the purchase of the present Hsin-min Mukden Railway, shall enter into a contract with the Southern Manchurian Railway Company for the loan in connection with that section of the line east of the Liao River, and shall also appoint and direct a Chinese engineer to consult and act with the Japanese engineer in making a survey of the Kirin-Changchun Line to furnish a basis for estimating the amount of the loan needed for the construction of the line, and within six months after the completion (of the survey) shall enter into a contract with the Southern Manchurian Railway Co. for the loan.

5. The lines from Hsin-min to Mukden and from Kirin to Changchun under the management of China must connect with the Southern Manchurian Railway line. The Tientsin Shanhai Kuan Railway Administration and the Southern Manchurian Railway Company shall appoint representatives to consult together and draw up the necessary regulations.

6. The rate at which the loans specified in Articles 1 and 2 shall be issued shall be determined fairly in accordance with the terms of the most recent loan negotiated by China with any foreign country.

7. Within one month after the payment of the purchase price of the Hsin-min Mukden Railway, the Chinese Railway Administration shall appoint officers to take control of the same.

Japanese Calendar, Meiji XLth Year, Fourth Moon, 15 Day.

Chinese Calendar, Kuanghsu XXXIIIrd Year, Third Moon, 3rd Day (April 15, 1907.)

IMPERIAL ORDINANCE SANCTIONING ORGANIZATION OF SOUTH MANCHURIA RAILWAY JOINT STOCK COMPANY.—ISSUED JUNE 7, 1906.

(Translated from Japanese.)

We hereby sanction the organization of the South Manchuria Railway Joint Stock Company and cause the following Ordinance to be promulgated.

(Sign Manual.)
(Privy Seal.)

June 7, 1906.

(Countersigned) MARQUIS KIMMOCHI SAIONJI,
Minister President of State.

(Countersigned) ISABURO YAMAGATA,
Minister of State for Communications.

IMPERIAL ORDINANCE No. 142, JUNE 7, 1906.

ARTICLE 1. The Government shall cause the organization of the South Manchuria Railway Joint Stock Company for the purpose of engaging in railway traffic in Manchuria.

ART. 2. The shares of the company shall all be registered and may be owned only by the Japanese and Chinese Government or by subjects of Japan and China.

ART. 3. The Japanese Government may offer its Manchurian Railways, and their appurtenances, and its coal-mines in Manchuria, as the capital to be furnished by the Government.

ART. 4. The company may divide the new shares to be raised into several issues to be floated at different times, but the amount of the first issue shall not be less than one-fifth of the whole amount.

ART. 5. The first payment upon the shares need not exceed one-tenth of the value of the shares.

ART. 6. The company shall establish its head-office at Tokio and a branch office at Dalny.

ART. 7. The company shall have a president, a vice-president, four or more directors and from three to five inspectors.

ART. 8. The president shall represent the company and manage its affairs.

The vice-president shall perform the president's duties when the latter is prevented from discharging them, and shall act as president when the latter post is vacant.

The vice-president and directors shall assist the president in his duties and shall take charge of the various departments of the company's business.

The inspectors shall examine the business of the company.

ART. 9. The Government, subject to the Imperial sanction, shall appoint the president and vice-president, whose terms of office shall be five years.

The Government shall appoint the directors from among those shareholders who own fifty or more shares. The term of office shall be four years.

The inspectors shall be elected from among the shareholders at a general meeting of the latter. The term of office shall be three years.

ART. 10. The amount of compensation and allowances of the president, vice-president and directors shall be fixed by the Government.

ART. 11. The president, vice-president and directors of the company shall not engage in any other business or trade, under any name whatsoever, during their terms of office except by special permission of the Government.

ART. 12. The Government shall appoint supervisors for the South Manchuria Railway Joint Stock Company to supervise the business of the company.

The supervisors may at any time examine the company's business and inspect their safes, books, documents and any other articles belonging to the company.

The supervisors, whenever they may deem it necessary, may order the company to report on the various accounts and the condition of the company's business.

The supervisors may attend the general meetings of the shareholders of the company, or any other meetings, and express their opinions, but shall not be entitled to vote.

ART. 13. The Government may issue such orders as may be necessary to superintend the business of the company.

ART. 14. In case the decisions of the company or the conduct of its officers are in violation of laws and regulations or of the object of the company, or are detrimental to the public welfare, or fail to carry out the orders of the Government office under whose jurisdiction the company is, the Government may cancel the said decisions or dismiss the officers concerned.

ART. 15. When the Government deems it necessary, it may apply to the company the provisions of the laws and regulations relating to railways in Japan.

In the case referred to in the preceding paragraph, the Government shall inform the company in advance as to the laws and regulations to be so applied.

ART. 16. When not otherwise provided for in this Ordinance, the provisions of the Commercial Code and its Supplementary Laws and Regulations shall be applied.

ART. 17. The provisions of Imperial Ordinance No. 366a of 1900 shall not be applied to the company that is to be organized in accordance with this Ordinance.

SUPPLEMENTARY RULES.

ART. 18. The Government shall appoint a commission to transact all business relating to the organization of the South Manchuria Railway Joint Stock Company.

ART. 19. The organizing commission shall draw up the company's articles of association, and after the said articles have been approved by the Government, shall open the subscriptions for the first issue of shares.

ART. 20. When the first issue of the company's shares has been subscribed, the commission shall present to the Government the subscription list and apply for permission to organize the company.

ART. 21. When the permission referred to in the preceding Article has been given, the organizing commission shall, without delay call for the first instalment upon each share.

When the first instalment referred to in the preceding Article has been paid in, the commission shall, without delay, call a general meeting for organization.

ART. 22. At the close of the first general meeting the organizing commission shall turn over its business to the President of the South Manchuria Railway Joint Stock Company.

GOVERNMENT ORDER CONCERNING THE SOUTH MANCHURIAN R. R. JOINT STOCK COMPANY AND ARTICLES OF INCORPORATION. ISSUED AUGUST 1, 1906. (TRANSLATED FROM JAPANESE.)

To Masatake Terauchi, Chairman of the Organizing Commission of the South Manchurian Railway Joint Stock Company, and eighty other members of the Commission:

The following orders are hereby given respecting the several matters relating to the organization of the South Manchurian Railway Joint Stock Company, all matters pertaining to the management of which have been entrusted to the Commission.

August 1, 1906.

ISABURO YAMAGATA,
Minister of Communications.

YOSHIRO SAKATANI, LL.D.,
Minister of Finance.

VISCOUNT TADASU HAYASHI,
Minister for Foreign Affairs.

ARTICLE 1. In accordance with the Additional Agreement of the Japan-China Treaty relating to Manchuria, signed on December 22, 1905, the company shall engage in the traffic of the following railways:

Tairen-Changchun.
Nankuanling-Port Arthur.
Tafangshen-Liushutun.
Tashichiao-Yingkow.
Yentai-Yentai Coal Mine.
Sukiatun-Fushun.
Mukden-Antunghien.

ART. 2. The railways mentioned in the preceding Article shall be changed to the 4 feet 8.5 inch gauge within three (3) years counting from the day on which the company commences its operations.

On the Tairen-Changchun Railway the tracks between Tairen and Sukiatun shall be doubled.

ART. 3. The company shall make the various arrangements necessary for the lodging and meals of the passengers, as well as for the storage of goods at the principal stations on the line.

At the points on the harbors and bays touched by the railways the necessary arrangements shall be made for connecting water and land transportation.

ART. 4. For the convenience and the profit of the railways, the company may engage in the following accessory lines of business:

Mining, especially the operation of the coa mines at Fushun and Yentai.

Water transportation.

Electrical enterprises.
Sale on commission of the principal goods carried by the railways.
Warehousing.
Business relating to the land and buildings on the land attached to the railways.
In addition, any business for which Government permission has been given.

ART. 5. The company shall, subject to the permission of the Government, make the necessary arrangements for engineering works, education, sanitation, etc., within the area of lands used for the railways and the accessory lines of business.

ART. 6. To defray the expenses necessary for the arrangements mentioned in the preceding Article, the company may, subject to the permission of the Government, collect fees of those who live within the area of lands used for the railways and the accessory lines of business, or make any other assessments for necessary expenses.

ART. 7. The total amount of the company's capital stock shall be 200 million yen, of which 100 million yen shall be furnished by the Imrial Government.

ART. 8. The capital to be furnished by the Government mentioned in the preceding Article shall consist of the following properties:—
The existing railways.
All properties belonging to the railways, except those in the leased territory specially designated by the Government.
The coal mines at Fushun and Yentai.

ART. 9. The rolling stock now being used by the Government, and the rails as well as the accessories of the Mukden-Antunghien temporary railway, shall be sold to the company at a reasonable price.

ART. 10. The shares not owned by the Government shall be open to subscription by Japanese and Chinese subjects.

ART. 11. When the dividend of the company for any business year is less than six (6) per cent per annum on the paid amount for the shareholders other than the Government of Japan and China (hereafter to be styled merely "the shareholders"), the Government shall supply the deficiency for a period of fifteen (15) years only, (or for thirty (30) business years if the calendar year be divided into two business years), commencing from the day of the registration of the company's establishment. However, the amount of money to be furnished by the Government to supply the deficiency referred to shall, under no circumstances, exceed six (6) per cent per annum on the capital paid in by the shareholders.

ART. 12. When the dividend of the company for any business year does not exceed six (6) per cent per annum on the capital paid in by the shareholders, the dividend on the shares owned by the Government need not be paid.

The shares owned by the Chinese Government shall be dealt with in a similar way to those owned by the Imperial Government.

ART. 13. The Government shall guarantee the payment of interest on the debentures which the company may issue for the reconstruction of the railways, or for the operation of the accessory business, and on those which the company may issue for consolidating or redeeming these debentures. The Government, shall, if necessary, guarantee the repayment of the principal.

The amount of the face value of the debentures to be guaranteed by the Government shall not exceed the amount remaining when the capital paid in by the shareholders other than the Government is subtracted from the total of the capital subscribed by them.

The debentures mentioned in the first paragraph shall be redeemed within twenty-five (25) years counting from the year of their issuance.

ART. 14. For the debentures issued in accordance with the provisions in the first paragraph of the preceding Article, the Government shall supply the amount corresponding to the interest on the debentures.

When the dividend on the capital paid up by the shareholders exceed six (6) per cent per annum, the surplus shall first be applied to the payment of the interest on the debentures. However, in this case the amount of surplus shall be deducted.

ART. 15. When there is any surplus after paying the interest on the debentures, as mentioned in the preceding Article, out of the profits of the company's business, the said surplus shall be apportioned to the shares owned by the Governments of Japan and China until the rate is equal on the respective amounts paid up by all shareholders.

ART. 16. The money to be supplied by the Government, as provided for in Articles 11 and 14, shall bear interest at six (6) per cent per annum. The interest shall be added annually to the principal and the total shall be the company's indebtedness to the Government.

When the dividend for all the shares exceeds ten (10) per cent per annum, the surplus shall be devoted to the redemption of the company's debt mentioned in the preceding paragraph.

ART. 17. Any surplus of funds raised by means of the debentures mentioned in Article 13 shall be deposited with the Division of Deposits in the Department of Finance.

ART. 18. The company shall determine estimates of the capital to be paid up and the debentures to be floated during each business year, their face value, issuing price, rate of interest, date of issuance et cetera, and shall receive the Government's approval.

ART. 19. The company shall determine the regulations relating to its finances and business, and shall secure the Government's approval.

When the company desires to alter the regulation mentioned in the preceding paragraph and the articles of incorporation, similar steps shall be taken.

ART. 20. The plans of the company's business, the estimate of the cost of operation, the budget of income and expenditures connected with the Company's business, the settlement of the same and the rate of the dividend for each business year shall be submitted to the Government for approval. When the company desires to alter the foregoing items, similar steps shall be taken.

ART. 21. At the designation of the Government the company shall report on the following matters:—

The present conditions of the cost of operation as well as the income and expenditure connected with the company's business.

The actual condition of the company's work in general.

ART. 22. Without the permission of the Government the company shall not dispose of its principal rights and properties; nor give the same for security.

ART. 23. When the Government deems it necessary, it may order the freight charges to be reduced, but only under special conditions.

ART. 24. The Government may, when it deems necessary, order the company to make new works arrangements or modify the existing ones.

ART. 25. At the designation of the Government the company shall be under obligation at any time to place the railways, land and any other articles at the service of the Government.

ART. 26. The Articles and paragraphs relating to the funds to be supplied by the Government and the Government guarantees mentioned in the present order shall be confirmed upon the approval of the Imperial Diet.

THE ARTICLES OF INCORPORATION OF THE SOUTH MANCHURIAN RAILWAY JOINT STOCK COMPANY.

CHAPTER I. GENERAL PROVISIONS.

ARTICLE 1. This company shall be called the South Manchurian Railway Joint Stock Company and is established in accordance with Imperial Ordinance No. 142 of 1906 and in obedience to the Order of the Imperial Japanese Government.

ART. 2. The liability of the shareholders of this company is limited to the value of the shares owned by them.

ART. 3. This company shall establish its head-office at Tokyo and its branch office at Tairen.

ART. 4. The objects of this company are as follows:

1. To engage in the transportation business of the following railways in Manchuria:
Tairen-Chanchung Railway.
Nankuanling-Port Arthur Railway.
Tafangshin-Liushutun Railway.
Tashichiao-Yingkow Railway.
Yentai-Yentai Coal-Mine Railway.
Sukiatun-Fushun Railway.
Mukden-Antunghien Railway.

2. To engage in the following lines of accessory business for the benefit of the railways:
Mining, especially the operation of the coal mines at Fushun and Yentai.
Water transportation.
Electrical enterprises.
Warehousing.
Business relating to the land and buildings on the land attached to the railways.
Any other business for which the permission of the Government may be given.

ART. 5. The capital of this company shall be 200,000,000 yen. However, the amount of the first subscription of shares shall be yen 20,000,000, not including the shares to be owned by the Imperial Japanese Government. The second and subsequent subscriptions shall be opened from time to time, as necessity may require, upon the resolution of a general meeting of the shareholders.

ART. 6. The public notices of this company shall be published in the newspapers in which the public notices of the court of law are published to whose jurisdiction the company is subject in Tokyo, and in the newspapers in which the public notices of the Government General of Kwangtung are published at Tairen.

CHAPTER II. SHARES.

ART. 7. The share certificates of this company shall all be registered, and each share shall be two hundred (200) yen.

ART. 8. The certificates of shares of this company shall be of the following seven denominations:—
One-share certificates.
Five-share certificates.
Ten-share certificates.
Fifty-share certificates.
One hundred-share certificates.
One thousand-share certificates.
Ten thousand-share certificates.

ART. 9. The certificates of shares of this company shall bear the name of the company, the date of registration, the total amount of capital, the amount of each share, the amount paid up, and the number of certificate. They shall bear the signature and seal of the President.

ART. 10. As to the payments upon the shares, twenty (20) yen per share shall be paid in at the first call. For the second and subsequent calls on the shares, the President shall determine the amount to be paid in as well as the time of payment, and notice of the same shall be sent to each shareholder at least sixty (60) days in advance. However, each call on the shares shall not exceed twenty (20) Yen per share.

ART. 11. If a shareholder fails to make payment by the date fixed for payment on the shares, delay interest shall be charged him at the rate of four (4) sen per day per one hundred (100) Yen on the amount due.

ART. 12. If a shareholder fails to make payment within fifteen (15) days from the date fixed for the first payment on the shares, the company may demand that payment be made within thirty days; and if the money is not paid in by that time, the company may notify him that his rights as a shareholder of this company shall be forfeited.

In the case mentioned in the previous paragraph, whose rights are lost, the application money previously paid shall not be refunded.

ART. 13. If at the second and subsequent calls on the shares a shareholder fails to make payment within fifteen (15) days after the

date fixed for payment, the company may notify such shareholder that payment must be made within thirty (30) days, and that, in the case of failure to comply, his rights as a shareholder of this company shall be forfeited.

When, in the case mentioned in the previous paragraph, a shareholder has forfeited his rights as such, the company shall notify each assignor of shares that payment must be made within fifteen (15) days and the assignor who first pays the amount in arrears shall acquire the shares. If no assignor pays, the company shall sell the shares at auction. If the amount realized by the auction is not sufficient to cover the amount in arrears, the previous shareholder shall be required to make good the deficit. If the previous shareholder does not make good within fourteen (14) days, the company shall demand performance of the assignors.

ART. 14. The liability of the assignors mentioned in the preceding Article is extinguished after two years from the time when the assignment was entered in the Register of Shareholders.

ART. 15. If a company or any other legal person, public or private, owns the shares of this company, it shall appoint its representative and have his name entered in the Register of Shareholders of this company. If shares are held by two or more persons in common, they are required to appoint one person to exercise their rights as shareholder. Persons holding shares in common are jointly and severally liable to the company for the payment upon the shares.

ART. 16. When shares are to be assigned, the parties concerned shall make a written statement in accordance with the form prescribed by this company and apply for the alteration of the certificates of shares. However, when a person inherits shares by virtue of succession, bequest or any decision rendered by a court of law, such person is required to attach to the statement referred to a certificate of the census official or other documents as evidence that the company may deem necessary.

The assignment of any share shall not be valid unless the name and domicile of the assignee are entered in the Register of Shareholders and the name of the said assignee is entered on the share certificate in question.

ART. 17. Should any certificate of shares be destroyed, mutilated or lost, the shareholder may apply for a new certificate of shares by presenting to the company a statement giving the facts in the case and signed by two or more persons as guarantors. However, in case of loss, a public notice to that effect shall be given at the expense of the applicant, and the new certificate of shares shall be issued only when no objection is raised within sixty (60) days from the date of the said public notice.

ART. 18. If any shareholder wishes to change the denominations of his certificates of shares, the said certificates shall be presented to the company together with the application.

ART. 19. For the registration of a change of an owner's name on a certificate of shares, the issue of a new certificate of shares or the alteration of the denomination of a certificate of shares, the prescribed fees of the company shall be collected from the applicant.

ART. 20. During a period not exceeding thirty (30) days immediately preceding each ordinary general meeting of shareholders, the company shall suspend the assignment of shares.

CHAPTER III. SHAREHOLDERS.

ART. 21. The shareholders of this company shall be limited to the Governments of Japan and China, and the subjects of Japan and China.

ART. 22. The Imperial Japanese Government shall furnish the following properties as capital, and the company shall deliver to the Government five hundred thousand (500,000) shares, amounting to Yen 100,000,000, which is the value of the said properties:

The existing railways (except the rolling stock now actually in use, as well as the rails and accessories of the Mukden-Antunghien Temporary Railway).

All properties attached to the railways referred to, except such properties within the leased territory as may be designated by the Government.

The coal-mines at Fushun and Yentai.

ART. 23. Each shareholder shall have the right to one vote for each share owned by him.

ART. 24. The shareholders and their legal representatives shall report to the company their domiciles, names and a copy of their legal seals, when they require shares. When any alteration in the above facts has taken place, similar measures shall be taken.

CHAPTER IV. GENERAL MEETING.

ART. 25. An ordinary general meeting shall be called by the President twice every year in the month of June and December. An extraordinary general meeting shall be called by the President when the President or the Inspectors deem it necessary to do so, or when the shareholders owning at least one-tenth or more of the total number of shares have presented a request to that effect, stating the object of the general meeting and the reasons for calling the same. When the shareholders have requested a general meeting to be called, the President shall take steps for calling the same within fourteen (14) days.

ART. 26. The discussion at a general meeting shall be confined to the subjects previously announced.

ART. 27. The date, time and place of a general meeting shall be determined by the President, and a notice to that effect shall be sent out to the shareholders at least thirty (30) days in advance of such meeting.

ART. 28. The President shall act as chairman of a general meeting.

ART. 29. The shareholders may appoint only shareholders of this company as their representatives, and their powers of attorney shall be presented to the company.

ART. 30. The chairman of the general meeting shall be allowed to exercise his right to vote as a shareholder.

ART. 31. Resolutions of a general meeting shall be adopted by a majority vote of the shareholders present. In case of a tie, the chairman shall have the casting vote.

ART. 32. The issuance of company debentures or amendments to the Articles of Incorporation shall be decided by a majority vote, with more than one-half of the total number of shareholders and also of shareholders representing a half or more of the capital stock present.

If, in the case mentioned in the preceding paragraph the necessary quorum is not present, a provisional decision may be made by a majority of the shareholders present. A notification giving the essential details of the said provisional decision shall be sent to each shareholder, and another general meeting shall be called in not less than one month.

At the second general meeting the said provisional decision shall be confirmed or rejected by a majority vote of the shareholders present.

ART. 33. The minutes of a general meeting shall be recorded in the Proceedings of the general meetings, and the same shall bear the signatures and seals of thePresident and chief officers present.

ART. 34. The chairman of the general meeting may adjourn the meeting or change the place of meeting. The discussion at an adjourned meeting shall be confined to the subjects on which no decision was made at the preceding meeting.

CHAPTER V. CHIEF OFFICERS.

ART. 35. The chief offices of this company shall be as follows:

President	1
Vice-President	1
Directors	4 or more
Inspectors	3 to 5

ART. 36. The term of office of the President and Vice-President shall be five years, and they shall be appointed by the Government subject to the Imperial sanction.

The term of office of the Directors shall be four years, and they shall be appointed by the Government from among those who own fifty (50) shares or more.

The term of office of the Inspectors shall be three years and they are to be elected by the shareholders at a general meeting of the shareholders.

ART. 37. The remunerations and allowances of the President, Vice-President and Directors shall be determined by the Government.

The remuneration of the Inspectors shall be determined by a resolution of a general meeting of the shareholders.

ART. 38. The Directors are required, during their term of office, to deposit with the Inspectors fifty (50) shares of the company owned by them. These shares shall not be returned to their owners even on their retirement from office until all affairs transacted during their term of office shall have been approved at a general meeting.

ART. 39. In the event of the office of any Inspector becoming vacant, an extraordinary general meeting of the shareholders shall be called for the purpose of a by-election, and the new Inspector shall hold office during the remainder of the term of office of his predecessor.

However, a by-election may be postponed until the next general meeting of the shareholders, except when the number of Inspectors has decreased to two or less.

ART. 40. The President shall represent the company and have general control of all its affairs.

The Vice-President shall represent the President when he is prevented from discharging his official duties, and shall act as President when that office is left vacant.

The Vice-President and the Directors shall assist the President, and each shall take charge of a part of the business of the company.

The Inspectors shall inspect the affairs of the company.

ART. 41. During their respective terms of office the President, Vice-President and Directors shall not engage in any other occupation or business under any name whatever without the permission of the Government.

ART. 42. The President shall keep at the head-office as well as the branch office copies of the Articles of Incorporation, and of the Record of Resolutions of the general meetings of shareholders He shall also keep at the head-office the Register of Shareholders and the Ledger of Debentures.

ART. 43. The President shall submit the following documents to the Inspectors seven (7) days in advance of the date set for the ordinary general meeting of shareholders:

(1) An inventory of the company's properties.

(2) A balance sheet.

(3) A report on the company's works.

(4) An account of the profits and losses.

(5) Proposals relating to the reserve funds and to the dividends.

ART. 44. The President shall have in readiness at the head-office before the day of an ordinary general meeting of the shareholders the documents mentioned in the preceding Article and the Inspectors' report.

ART. 45. The President shall submit to an ordinary general meeting of the shareholders the documents mentioned in Article 43 and obtain its approval.

The President shall publish the balance sheet when he has obtained the approval mentioned in the preceding paragraph.

ART. 46. The Inspectors are required to examine the documents to be submitted by the President to a general meeting of shareholders and to report their views at the said meeting.

ART. 47. The Inspectors may at any time demand the President to report on the business of the company, and may examine the management of its affairs and the condition of its properties.

CHAPTER VI. SUPERVISORS.

ART. 48. The Supervisors of the South Manchurian Railway Joint Stock Company may at any time inspect the arrangements of the company's work, or examine the safes and books of the company as well as the various documents and articles belonging to it.

The Supervisors may, whenever they deem it necessary, order the company to report on the various business accounts and the condition of the company.

The Supervisors may attend the general meetings of the shareholders or any other meetings and express their opinions, but they are not entitled to vote.

CHAPTER VII. ACCOUNTS.

ART. 49. The account of this company shall be settled by dividing a year into two periods. From April to September of every year shall be the first half year and from October to the following March shall be the second half year.

ART. 50. This company shall set aside as a reserve fund one-twentieth (1-20) or more of the profits, whenever they are apportioned until the reserve fund amounts to one-fourth (¼) of the capital.

Special reserve funds other than that provided for in the preceding paragraph shall be determined by a resolution of a general meeting.

ART. 51. The dividends to the shareholders shall be paid according to the Register of Shareholders as it stands on June 1 and December 1.

ART. 52. When the dividend of the company for any business year is less than six (6) per cent per annum on the paid up capital for the shareholders other than the Governments of Japan and China (hereafter to be styled merely "the shareholders"), the Imperial Japanese Government shall supply the deficiency for a period of fifteen (15) years commencing from the day of the registration of the company's establishment. However, the amount of money to be supplied by the Government shall, under no circumstances, exceed six (6) per cent per annum on the capital paid in by the shareholders.

ART. 53. When the dividend of the company does not exceed six (6) per cent per annum on the capital paid in by the shareholders, the dividend on the shares owned by the Government need not be paid.

The shares owned by the Chinese Government shall be dealt with in a similar way to those owned by the Imperial Japanese Government.

ART. 54. The payment of interest on the debentures which the company may issue for the reconstruction of the railways, or for the operation of the accessory business, and on those which the company may issue for consolidating or redeeming old debentures, shall be guaranteed by the Imperial Japanese Government.

The reimbursement of the principal may also, if necessary, be guaranteed by the Imperial Japanese Government. The amount of the face value of the debentures to be guaranteed by the Imperial Japanese Government shall not exceed the amount remaining when the capital paid in by the shareholders other than the Imperial Japanese Government is subtracted from the total of the capital (Yen 100,000,000) subscribed by them.

The debentures mentioned in the first paragraph of this Article shall be redeemed within twenty-five (25) years.

ART. 55. For the debentures issued in accordance with the provisions of the first paragraph of the preceding Article, the Government shall supply the amount corresponding to the interest on the debentures.

When the dividend on the capital paid up by the shareholders exceeds six (6) per cent per annum, the surplus shall first be applied to the payment of the interest on the debentures. However, in this case the amount of surplus shall be deducted from the money to be supplied by the Government mentioned in the preceding paragraph.

ART. 56. When there is any surplus after paying the interest on the debentures, as mentioned in the preceding Article, out of the profits of the company's business, the said surplus shall be apportioned to the shares owned by the Governments of Japan and China until the rate is equal on the respective amounts paid up by all shareholders.

ART. 57. The money to be supplied by the Imperial Japanese Government, as provided for in Articles 52 and 55, shall bear interest at six (6) per cent per annum. The interest shall be added annually to the principal, and the total shall be the company's indebtedness to the Imperial Japanese Government.

When the dividend for all shares exceeds ten (10) per cent per annum, the surplus shall be devoted to the redemption of the company's debt mentioned in the preceding paragraph.

CHAPTER VIII. EXPENSES FOR ORGANIZING THE COMPANY.

ART. 58. The expenses for organizing the company shall not exceed 50,000 Yen.

Of the amount mentioned in the preceding paragraph that advanced by the Government shall be reimbursed by the company.

SUPPLEMENTARY ARTICLE.

ART. 59. The provisions in Articles 52 to 57 shall be confirmed upon being approved by the Imperial Diet.

FAR EASTERN RAILWAY NEWS

SUMATRA RAILWAYS.—A report on the development of Sumatra contains recommendations for the construction of an extensive system of railways designed to tap the rich agricultural and mineral lands. It is proposed to expend the sum of 62,000,000 guilders covering a period of ten years active construction. It appears that the country is sparsely settled and that it will be necessary to import labor in order to make the railway building campaign a success.

JAPAN'S RAILWAY REVENUE.—The total mileage under the control of the Railway Board according to the official report covering the month of September was 4,569 miles and the total receipts from all sources for the month were yen 6,703,500 or yen 48 per mile per day. This is a falling off compared with the corresponding month of last year of 83,396 and indeed during the six months, including September, the falling off in receipts amounted to yen 726,660 and the Board anticipates a falling off of at least a million during the present year. The passenger receipts for the month amounted to yen 3,716,410, an increase of yen 98,850, while the freight receipts amounted to yen 2,987,090, a decrease of yen 182,746 as compared with September last year. The traffic mileage of Japan's Railways has increased from 2,768 in 1897 to 4,569 at the date of the September report.

TONKIN-YUNNANFU RAILWAY EXTENSION.—The completion of the French Railway to Yunnanfu has stimulated interest in the extension from Yunnanfu to Luchow, Szechuan. This proposed line has been surveyed by way of Milong, Khuchingfu, Chanyichow and on via Hsuanweichow Yuning-hsien to Luchow. Should this road be extended it would give an outlet to the products of Szechuan by way of Haiphing and would no doubt affect the Shanghai trade via the Yangtsze. However, the construction of this extension presents one of the most difficult problems, without reference to the expense which would be enormous. It would pass through a mountainous country and at some points with altitudes over 8,000 feet. It would require much tunneling and cuttings. It is conceded, however, that the construction of the railway would bring large returns on investment. The outlay and the success of the work of construction of such a line would depend in a large measure on the co-operation given by the natives along the line of survey.

JAPANESE GOVERNMENT RAILWAY WORKS.—It has been announced officially that the Railway Board has in view the establishment of extensive locomotive and car building and repair shops to cost in the vicinity of yen 2,000,000 after the year 1913 in order to cope with the demand for railway supplies to cover the extensive operations in railway building contemplated in the new program to commence that year.

MANCHURIAN RAILWAY CONSTRUCTION.—The latest report from the progress made on the Antung Mukden reconstruction is to the effect that a section of about 25 miles connecting Antung and Shihchaotic was to have been opened for traffic by November 20th. Offices for the purchase of land and crops from the natives along the right of way have been established and the work of securing the lands has met with a minimum of opposition. It is not believed that much will be accomplished until the spring excepting pressing the work of tunneling and cuttings.

The construction of the Kirin-Changchun line is expected to begin in the spring. All the necessary arrangements are now being perfected so that unless some unforeseen difficulties present themselves there will be no further postponement. The doubling of the entire line of the South Manchuria Railway will soon be completed. Much of this work where it is most needed to carry the heavy traffic is now finished.

PEKING-KALGAN EXTENSION.—With the completion of the Peking-Kalgan line the prospects for great activity in invading Mongolia with a view to opening up the country to settlement grows brighter. Last year the route covering a distance of over 260 miles connecting Kalgan with Ho-k'ou on the Yellow River was surveyed, and now that the line to Kalgan makes the construction more feasible work will commence at once. It is the purpose of the government to finance it with the surplus earnings of the Imperial Railways of North China and to make it a purely Chinese road as is the Peking-Kalgan. It will take probably six or seven years to complete.

KUALA LUMPUR RAILWAY STATION.—The *Malay Mail* describes the new station being built by the F. M. S. Railways at this point.

The new station buildings, with platforms, will cover about 140,000 square feet or 3¼ acres when complete, the approximate cost being nearly $250,000. They will consist of the following:—A large station building facing on Damansara Road occupying the site of the present station and a good deal of additional space. Inside the station will be three platforms, one each side and an island platform, the whole covered by a roof. On the further side will be no buildings but only the outer wall of the station supporting one side of the roof. This is the wall which has recently arisen bleak and menacing from a welter of bricks and mortar on the side of the station furthest from Damansara Road. Two subways, one for passengers and one for luggage, will connect the different platforms.

CHANGSHA-CHU-CHEO RAILWAY.—This section is now being constructed from Changsha and a distance of two miles is reported completed. The station and yard grounds are near the New River at Changsha. On the Chu-cheo end operations have likewise begun and there is prospect for the early completion on this section which will ultimately become a part of the Canton-Hankow.

TIENTSIN-PUKOW (NORTHERN SECTION).—The Hon. Chu Cheng-chi has been appointed Acting Managing Director of this section until the vacancy following the scandal is filled permanently.

SZECHUEN-HANKOW RAILWAY.—The work of construction on the Ichang-Wanhsien section of this line was commenced on November 8th. A number of students from the Railway College at Chengtu have been engaged to superintend the work.

THE TIENTSIN TERMINUS OF THE TIENTSIN-PUKOW.—It has been decided, according to the latest advices, to locate the station near Hsiku at the extreme northern end of the city. This gives a station at the South Gate as well as the terminal and a bridge across the river will give easy connection with the Peking Railway from the site selected.

SOUTH MANCHURIA RAILWAY'S HALF YEAR.—The passenger and freight receipts of the S. M. railway for the past six months ending September last, amounted to Yen 5,850,177, showing an increase of Yen 1,477.42 over the figures for the corresponding period of last year. The six months' receipts per mile per day for the main line are returned as Yen 61.73 and that for the Antung-Mukden line Yen 5.54; increases of Yen 17.61 and seven sen respectively on the last figures.

MIRUNO-NOJIRI RAILWAY.—This section, five miles in length, and part of the Central Western Railway of Japan, was opened to traffic in September.

CANTON-HANKOW CONSTRUCTION.—The Liangtan-Pikiangkou section of this line was opened for traffic in October. This section adds six miles to the 45 miles operating between the Canton terminus and Liangtan. Two trains daily each way are scheduled.

KOREAN RAILWAYS.—The transfer of the Korean lines to the control of the Japanese Railway Board has been the subject of much discussion, but there can be no doubt of the purpose of the Japanese authorities to press the campaign of railway construction proposed for the next few years. The estimate for the survey and preliminary expenses entailed on the proposed Seoul Wonson and Ho-Nam lines which will cover the fiscal year of 1910, amounts to yen 1,000,000 each. It is understood that some old surveys prepared by earlier promoters will be followed in a large measure in regard to the Ho-Nam line.

INDIAN RAILWAYS.—The report for the year ended June 30th gives a total mileage of railways in India of 30,500 miles and about 3,000 additional miles under construction.

NEW HUPEH RAILWAY PROPOSED.—The construction of a line 250 kilometers in length connecting Siang yang fu on the Han River with Kuang-shui on the Peking-Hankow Railway has been proposed by the Viceroy of the Hukuang Provinces. The province of Hupeh pledges half the amount of the capital and the Peking-Hankow the balance.

THE CHIN-HSU RAILWAY.—The construction has commenced on this line which, when complete, will connect Hsuchowfu on the Tientsin-Pukow with Kwachow, a point opposite Chekiang on the Shanghai-Nanking line. This line is being built by Chinese capital. The line will follow the Grand Canal from Kwachow to Tsingkiangpu.

SOUTH MANCHURIA SLEEPING CARS.—Two sleeping cars built after the Pullman pattern but with Wagon-Lits appointments and sleeping arrangements will soon be turned out at the South Manchuria Railway Shops at Dairen. Each car will accommodate 30 passengers.

JAPAN'S TRANS-EMPIRE LINE COMPLETED.—On November 21st the formal opening of the Kagoshima line was celebrated and thus was formally opened to traffic a trunk line crossing the Empire a distance of 1,750 miles, the construction of which was begun in 1899. This trunk connects Kushiro in Hokkaido and Kogoshima in Kyushu. The Kagoshima line, the completion of which concluded this important trunk, connected that city with Yashima. The time between the termini is placed at about five days and from Tokyo to the Southern terminus, 48 hours. A correspondent of the *Japan Times* says:

"Japan can now, if need be, assemble three divisions of her armed forces at her southernmost point within 12 hours, and treble that number with additions from Tokyo with 48 hours. To say nothing of the strengthening of the national defence of Japan, therefore, we may view this as a great progress made in Japan's railway enterprise not necessarily for military purposes, but more so by enhanced facilities for trade and transportation."

SIBERIA'S NEW TRUNK RAILWAY.—The survey of the new line connecting Chita with Khabarovsk is being pushed rapidly. When completed and connected up with other central and western lines projected will give Siberia a valuable network of railways and double connection with Vladivostok.

NANKING-WUHU RAILWAY.—The Kiangsu council has decided to raise the funds for the construction of this line from among the merchants and gentry of the different towns affected in Kiangsu and Anhui.

JUNCTION OF THE SHANGHAI-NANKING AND KASHING RAILWAYS APPROVED. The Ministry of Posts and Communications has approved the junction of the Shanghai-Nanking and the Shanghai-Kashing railways. It has been decided that the junction should begin at Chenju and pass Chiangch'iao, Peihsingching and Tsaohoching to Meichialung.

FAR EASTERN RAILWAYS

LOCOMOTIVES FOR THE EAST.—*The London and China Express* states that Messrs. Andrew Barclay, Sons & Co., Ltd., Kilmannock, have received orders for two locomotives for an important company in India; three light class locomotives for Japan; one 14 in. crane locomotive, to lift 5 tons, for South Wales; one 17 in. crane locomotive, to lift 8 tons, and one 9 in. narrow gauge locomotive both for British Colonies, also a number of standard locomotives for home collieries and steel works.

PAKNAM RAILWAY COMPANY, LTD., INCREASES CAPITAL.—At a meeting held at Bangkok, December 9th, it was resolved to increase the capital of the company from Ticals 400,000 to Ticals 500,000 and to make the par value of the shares Ticals 100 instead of Ticals 80. The shareholders also decided to make application to His Majesty, the King of Siam, for a Royal Charter.

PORT-ARTHUR-DALNY RAILWAY.—This line has been ceded to Japan and, according to report, the Chinese retain the civil administration of the South Manchuria Railway District.

FOKIEN RAILWAY CONSTRUCTION.—Advices from native sources are to the effect that the Amoy-Swatow Railway has borrowed Tls. 500,000 and that construction on this line will be resumed.

KIRIN-CHANGCHUN RAILWAY.—Work on the survey of this line began early in December. Chief Engineer Margario is preparing to carry on the survey from both ends simultaneously and expects to have everything ready for active construction by July of this year and have over 30 miles of the line in operation before winter sets in. It is expected that the entire line will be in operation by the Spring of 1912.

ANTUNG-MUKDEN RAILWAY CONSTRUCTION.—The work of piercing the Fuhklinglin tunnel commenced in September is progressing satisfactorily. Latest reports are to the effect that up to December 15th a distance of 135 feet had been pierced from one end and 80 feet from the other. The entire length of the tunnel, when complete, will be approximately 74 chains and is the most difficult part of the work of construction on this line. The contractors expect to have the tunnel completed by November, 1910.

PROPOSED RAILWAY LOTTERY.—This is the latest report from native sources regarding ways and means to raise money for the construction of railways throughout the Chinese empire. According to a Peking wire the Board of Posts and Communications has proposed the establishment of a lottery with a view to creating a construction fund. So far as has been learned Imperial sanction has not been secured.

CANTON-HANKOW RAILWAY.—The work of construction on the different sections of this line is progressing favorably. The section from Canton to Yuntam is in operation and another fifteen miles will soon be added to Taimiao when the viaducts are completed. There has been some difficulty in purchasing the right of way, but this has not delayed the work on other sections. The tunnel at Taimiao has been completed for some time. The survey to the Honan border is now complete and work has commenced at Lokchong.

DAIREN-LAOHUTAN LIGHT RAILWAY.—The promoters of this enterprise have asked for a franchise and propose to spend yen 50,000 in installing a line. They agree to make ten trips a day each way and to provide cars with a capacity of seating 30 passengers. From 4.5 to 10 ton locomotives will be used. They also propose to start work on the construction next spring.

ICHANG-SZCHUAN RAILWAY —The news that the first sod had been turned at Ichang on the proposed section to connect with the capital of Szchuan would indicate that it is the purpose of the inhabitants of Hupeh and Szchuan to build this line without foreign assistance. It is significant in view of the proposed loan for the construction of the Chuan-Han line of which this section would naturally become a part or otherwise a formidable rival. It is understood that the capital for this native enterprise was largely subscribed by Szchuan.

JAVA RAILWAYS.—The work of construction on the Eastern section under the direction of the Railway Department is being pressed vigorously notwithstanding the fact that labor is reported to be scarce.

PHILIPPINE RAILWAY CONSTRUCTION IN PANAY.—It is the purpose of this company to complete the construction of the line connecting Iloilo and Capiz, a distance of 117 miles, by the end of October, and over 5,000 laborers are employed in pushing the work to completion. About 68 kilometers have been completed. Work was greatly delayed during the rainy season.

THE YUNNAN RAILWAY.—The Governor General of Indo-Chine has announced that through traffic between Yunnanfu and Tonkin will commence on February 1st. The previous announcements of the completion of the road appears to have ignored several breaks in the line where temporary construction is being replaced more permanently. This is the first definite official announcement.

CHEFOO-WEIHSIEN RAILWAY.—Capital to the amount of Tls. 5,000,000 has been subscribed by the merchants and gentry in the Chefoo district for the purpose of constructing the line for which there has been much agitation during the last two years. Application for registration has been made to the Ministry of Agriculture, Industry and Commerce. This line is believed to promise the salvation of Chefoo as a commercial port and it is believed that it will soon be realized.

MUKDEN RAILWAY JUNCTION.—Negotiations are under way in regard to the extension of the Chinese Railway from Hsinmintun into the city of Mukden as far as the Western Gate where the line would connect with the Antung-Mukden line. This would make the Antung line a feeder of the Chinese Railway instead of the South Manchuria and it is possible that the Japanese will hesitate about sacrificing this traffic.

CHINESE EASTERN RAILWAY.—This line has inaugurated first and second class sleeping accommodations in composite cars on the thrice-weekly Trans-Siberian Service from Irkutsk and Chanchun via Harbin each way. The charge is yen 1.50 for each berth taken and yen 1.00 in addition for bed clothes.

PEKING-HANKOW RECEIPTS.—The announcement is made that the receipts from all sources for the month of November reached Tls. 1,170,000 approximately.

SIBERIAN RAILWAYS.—The selection of a route to connect South Siberia and Altai with the trunk line is now in the hands of a commission. It is understood that Semipalatinsk will be the terminal point and the point of junction lies between Omsk and Tomsk.

YALU RAILWAY BRIDGE.—The work of construction is progressing rapidly and from latest reports about one-third of the distance across is prepared for the superstructure from the Korean side.

FEEDERS FOR THE SHANGHAI-NANKING RAILWAY.—The necessity of increasing the traffic for the Shanghai-Nanking line so as to put it on a paying basis is now being agitated. It is proposed to short feeding lines in the vicinity of Soochow tapping Huchow, Kiangyin, Tanyang City, and Ku-yung. It is believed that the construction of these short lines would make a marked increase in traffic for the main line which is sadly in need of the receipts.

YUNNAN-KWEICHOW RAILWAY.—The construction of the line proposed will probably be built by funds contributed jointly by the Board of Posts and Communications and the merchants of Yunnan and Kweichow.

JAPANESE RAILWAYS.—The program of the Japanese Government appears to point to a complete control of all her railways and their development along the most modern lines. Among the improvements proposed is the broadening of the gauge to standard and the construction of new lines and extensions until the system includes all the most important sections of the empire. This means the expenditure of about yen 1,000,000,000 before the reorganization is complete and all the lines brought up to standard.

STATE CAR FOR THE SOUTH MANCHURIA RAILWAY.—An order has been placed in England for a state car which will arrive in April. It will be 80 feet in length and equipped with two private rooms, sleeping compartments, grill, bath, etc. Besides this special coach, sleeping cars of special design are being built at the South Manchuria shops.

KANCHENGTZU CONNECTIONS.—Arrangements have been made whereby the South Manchuria Railway will have a switch connecting with the freight depot on the Chinese Eastern at this point to facilitate the freight traffic.

DOUBLING THE TRANS-SIBERIAN RAILWAY.—Many conflicting reports have been in circulation regarding this project. A German paper is responsible for the report that arrangements had been made with American capitalists to construct the additional track the whole length of the present line. This is denied by St. Petersburg but there seems some truth in the fact that American capitalists have been interested in such a proposal and there is a well-grounded belief that the Russian authorities are not adverse to this means of increasing the facilities of the line in view of the interest taken in the development of Siberia of late years.

KALGAN-KURUN LINE.—This project has been postponed on the recommendation of the Board of Posts and Communications in view of the enormous cost of construction.

HUNAN SECTION OF THE CANTON-HANKOW.—Another memorial has been submitted to Peking by the Governor of Hunan announcing that the people of that province are prepared to furnish the funds for the construction of the line through that province.

CARS FOR THE ANTUNG-MUKDEN.—The South Manchuria Railway shops are turning out 60 2-ton cars to meet the increased demand for cars on this line. There are already in use on the line 500 five-ton and 200 two-ton cars.

YENTAI BRANCH LINE.—The laying of steel on the branch connecting the station with the colliery is complete and the ballasting is finished for half the distance. The latter work has been postponed until next spring.

KIAOCHOW-TSINCHOU RAILWAY.—The Governor of Shantung has proposed a loan to secure money for the construction of this line and the matter has been discussed by the Shantung Assembly.

EAST SAGHALIEN RAILWAYS.—Governor Hiraoka has announced the intention of the government to construct a network of railways on the east coast for the purpose of developing the mining and lumbering industries of that section.

KOREAN RAILWAYS.—With the announcement of the transfer of the control of the Korean lines to the Japanese Railway Bureau the statement is made that it is the purpose of the authorities to inaugurate a program that would, when carried to completion, mean a complete network of railways throughout the country and cost over yen 100,000,000. For the present, however, the work will be confined to the construction of a line from Gensan to Seoul and connecting Mokpho with a point on the Seoul-Fusan road, representing an outlay of yen 39,000,000 and spread over a period of 11 years. There are now over 600 miles in operation in Korea.

THE MANILA RAILWAY COMPANY.—The report shows that the net receipts for the year 1908 from the holdings in the Manila Railroad Company of New Jersey, U. S. A., were £116,916, or, after deduction of London expenses, £112,215. Out of this £93,200 has been paid to account of the interest on the A and B Debentures of the company, less the proportion transferred to expenses of construction, as provided for in the plan of reconstruction, leaving a net balance of £19,015, which, with the amount brought in from last account, makes a total of £38,093. This it is proposed to carry forward. The claims of the old company against the Spanish Government (which have been fully provided for) are being prosecuted with the continued support of His Majesty's Ambassador at Madrid, but the directors regret that they are so far unable to report any recoveries. The acting superintendent of the Manila Railroad Company of New Jersey reports that the year's traffics suffered considerably owing to the failure of the rice crop.

YOKOHAMA-HACHIOJI RAILWAY.—This line will probably be leased by the Government under a contract to pay the shareholders a dividend equal to 3.5%. It was opened in September 1908 and is 27 miles in length. Owing to the competition of the government lines the company has been unable to declare any dividend. The result was a proposal to lease to the Government under the above conditions.

KWEILIN-NANNING PROJECT.—Two Belgian engineers are engaged surveying a route to connect these two points via Liuchow and Pingchou on behalf of the Chinese Government and a British engineer is also engaged in a similar enterprise on behalf of a private syndicate.

JAPANESE RAILWAYS.—The following is quoted from Vice-Consul General Babbit's report on railway development in Japan with reference to the fiscal year ending March, 1909:

"Among the improvements contemplated are the following: (1) The quadrupling of the Tokyo-Yokohama line, a distance of 18 miles, and the addition of electric power to the present system of locomotives; (2) the improvement and preparation of the Kioto-Kobe line, a distance of 47 miles, so that higher speed may be developed by trains on that section; (3) the work of linking the Kiushiu lines with those of the mainland by building a train ferry to run between Moji and Bakan (Shimonoseki); (4) the doubling of the Takaido line and its branches, the Kiushiu line and the Hokkaido line; (5) the building of roads at Yokohama, Nagoya, Osaka, and Kobe to connect the present railway with the harbor; (6) the construction of the big central railway depot at Tokyo; (7) the conversion of the road over the Usui-Tore (Usui Pass) in the province of Shiano into an electric tram.

The expenditure will not exceed yen 20,000,000 for the term. Among the private enterprises referred to is the construction of the railway connecting Tokyo and Nagaoka, in the center of the petroleum district on the west coast, a distance of 146 miles and at a cost of approximately Yen 6,000,000.

CONTRACTING NEWS

PHILIPPINE BUREAU OF SUPPLY.—School Supplies—bids to be opened January 29th, 1910.—Hardware and Stationery—bids opened February 3rd, 1910.

U. S. NAVY, CAVITE.—Tenders for Coal Barge—opened January 25th, 1910.

U. S. A. COMMISSARY, MANILA.—6,600,000 pounds frozen beef and 200,000 pounds of Frozen mutton—bids opened April 5, 1910.

LOCAL SANITARY DEPARTMENT, BANGKOK.—Supply of Cast Iron Pipes and accessories water supply—no date for opening of bids advertised.

BIDS OPENED.—City of Manila—contract for laying distribution system, new gravity supply system. Awarded The Atlantic Gulf & Pacific Company, price ₱220,989. The other tenders were: F. D. Hayden, ₱273,522.20; American Hardware and Plumbing Company, ₱253,699.30 Delmar W. Smith, ₱299,055.

BIDS OPENED.—Electricity Department—Shanghai—for supplying two 500 K. W. Mixed Pressure Turbo Alternators with Condensing Machinery—Awarded Messrs. James Howden & Co. with Siemens Bros. Alternator, the price being £8,838, subject to the approval of Messrs. Preece & Cardew as to the standard of efficiency of high speed alternators. The following is a list of the other bidders.

Name	*Alternator*	*Price.* £
Willans & Robinson	Peebles	7,459
do.	General Electric Co.	7,482
do.	Vickers	7,603
Belliss and Morcom	Peebles	7,761
Maschinenfabrik Oerlikon		7,860
Willans & Robinson	Lancashire Dynamo Co.	7,816
Maschinenfabrik Oerlikon		7,942
James Howden & Co.	Peebles	8,055
Richardsons, Westgarth & Co.	Peebles	8,088
Willans & Robinson	Siemens	8,111
Belliss & Morcom	General Elect. Co.	8,122
Willans & Robinson	Electric Construction Co	8,129
Willans & Robinson	Siemens	8,231
Richardsons, Westgarth & Co	Vickers	8,311
Richardsons, Westgarth & Co.	General Elect. Co.	8,360
Belliss & Morcom a	Electric Construction Co.	8,471
James Howden & Co.	General Elect. Co.	8,471
Belliss & Morcom	Siemens	8,533
James Howden & Co.	Electric Construction Co.	8,700
Richardsons, Westgarth & Co.	Brown Boveri	8,775
Richardsons, Westgarth & Co.	Siemens	8,789
Richardsons, Westgarth & Co.	Electric Construction Co.	8,815
Belliss & Morcom	Dick Kerr	8,839
Richardsons Westgarth & Co.	Siemens	8,909
Parsons & Co.	Peebles	8,934
Willans & Robinson	Dick Kerr	8,943
Parsons & Co.		9,118
Belliss & Morcom	Siemens	9,167
Parsons & Co.		9,218
Brown Boveri		9,521
James Howden & Co. and two incomplete tenders.	Dick Kerr	9,559

BIDS OPENED.—Municipality Shanghai—600 sheets corrugated galvanized Roofing. Messrs. Anderson Meyer & Co.'s tender accepted Tls. 910. The other bidders were: Messrs. A. R. Burkhill & Co., Tls. 922 and Messrs. Jardine Matheson & Co., Ltd., Tls. 947.

BIDS OPENED.—Japanese Imperial Government Railways—27 spans of steel trough bridges. List of tenders follow:

	Yen.
Iida & Co.	572,198.—
Mitsui & Co.	573,850.—
Okura & Co.	584,450.—
Dodwell & Co.	585,000.—
American Trading Co.	588,930.—
Takata & Co.	599,998.—
Sale Frazer & Co.	606,900.—
J. Nishizawa & Co.	627,453.—
Samuel Samuel & Co.	637,960.—

BIDS OPENED—ILOILO.—Visayan Drug Store Construction 1,000 barrels cement. Contract awarded Messrs. Smith Bell & Co., Ltd., Dragon Brand.

CONTRACT AWARDED.—Construction of Ferro-Concrete building for the Chartered Bank of India and Australia on the Shameen Canton. Messrs. Howarth, Erskine Ltd.

CONTRACT AWARDED, SINGAPORE MUNICIPALITY.—Supplying pipes and special castings for gravitation main from Woodleigh filters to pumping station.—Messrs. Robert Maclaren & Co.—for repair of Johnston's Pier Pontoons and housing same for the year.—The Singapore Slipway and Engineering Co., Ltd., $1,220.—Supply of materials and construction foundations and concrete and brickwork incinerators—E. Y. Van Wyngaarden, $38,481.—Coal, 1000 tons. The Borneo Company at $8 per ton ex ship and $8.60 from wharf for Sanctoria or $7.40 ex ship and $8 wharf for Desherghur. Messrs. Riley Hargreaves secured the contract for the supply of engineer's stores for the year.

CEMENT U. S. ENGINEER CORPS.—(1) delivered one mile from Corregidor shipside (2) delivered shipside, Manila Bay (3) delivered one mile from Corregidor on lighters furnished by Government (4) delivered one mile from Carabao Island on lighters furnished by the Government. The following were the bids:

H. W. Peabody and Co., American Atlas brand—(1) $2.31; (2) $2.19; (3) $2.19; (4) $2.19.

Macondray and Co., Pyramid brand—(1) $2.31; (2) $2.19; (3) $2.19; (4) $2.19.

W. H. Anderson and Co., Green Island brand—(1) $2.36; (2) $2.19; (3) $2.19; (4) $2.27.

Smith, Bell and Co., Dragon brand—(1) $2.36; (2) $2.18; (3) $2.21; (4) $2.21.

Findlay and Co., Alsen brand.—(1) $2.41; (2) $2.29; (3) $2.29.

Wise and Co., O. K. Buffalo brand.—(1) $2.26; (2) $2.26; (3) $2.26.

Behn, Meyer and Co., Hemmoor brand.—(1) $2.30; (2) $2.18; (3) $2.18.

THE STRIPPING OF MANILA HEMP

Great interest is being taken in the development of the machine hemp stripping industry, and perhaps one of the most interesting features of the Manila Carnival will be a hemp stripping contest in which all the hemp machines in the islands are to be entered. News from Davao where the Clarke machine has been operating indicate that it has made good. Demonstrations have exceeded 400 pounds of fiber a day. The stripped hemp is clean and of good quality. Investigations made by the manager of the Clarke Company in Davao have resulted in certain improvements which will add to the value of the machine. Davao hemp is longer than that grown in the Northern provinces, some of the strands being over 16 feet. This requires two clampings, while if the machine was lengthened this double clamping and increase in waste and delay would be avoided. The machines are operated by the Clarke Company under an agreement with the planter whereby the latter delivers the hemp stalks to the machine and the company supplies the labor and operates the machine for just half of the product. The company is now prepared to supply machines within three months from the date of order.

FAR EASTERN RAILWAYS

HALF-YEAR BUDGET ESTIMATE FOR THE SHANGHAI-NANKING RAILWAY.—The following is the budget estimate approved for the first half-year, 1910:

	Actuals ½ yr. ended June, 1909	Estimate ½ yr. ending June, 1910
Receipts.		
Coaching traffic earnings	780,699	824,750
Goods " "	115,609	145,000
Telegraph "	172	250
Sundries "	19,567	20,000
Total Earnings	916,047	990,000
Add decrease or deduct increase, in balance of Traffic Account	—2,248	—10,000
Deduct decrease, or add increase, in balance of Foreign Railways	—265	....
Total Receipts	913,534	980,000
Expenditure. Percentage on gross earnings.		
Maintenance of Way Works and Stations 10.08	90,217	99,800
Locomotive Expenses 18.48	173,294	182,900
Carriage and Wagon Expenses 5.13	39,970	50,800
Traffic Expenses 13.49	130,263	133,500
General Charges 15.50	152,385	153,500
Flotilla Expenses 0.05	148	500
Special Expenses 2.12	19,415	21,000
Total Working Expenses (III) 64.85	605,692	642,000
Add increase or deduct decrease, in balance of Misc. Advances	....	....
Deduct increase, or add decrease in balance of "Demands Payable"	—18,073	—5,000
Net Expenditure	587,619	637,000
Net earnings	310,355	348,000
Net receipts	325,915	343,000
Memorandum		*Miles.*
Number of miles open for traffic on 30th June, 1909		203
Opened during half year ended 31st December, 1909		Nil.
Total on 31st December 1909		203
Expected to be opened during half-year ending 30th June, 1910		Nil.
Total likely to be open on 30th June, 1910		203
Train miles expected to be run during half-year ending 30th June, 1910		425,0000
Cost per train mile		$1 51

THE SZECHUAN TIBET RAILWAY.—Peking is again taking great interest in the construction of this line and the Boards of Finance and Posts and Communications are working on a scheme to further the enterprise. It is reported that H. E. Liu Chaun lin will be selected as Director in Chief of the line.

THE SINGAPORE-KRANJI RAILWAY.—The report for 1909 gives the information that 464,000 passengers with a revenue from this source of $181,775 and the receipts from freight traffic amounted to $34,000 making in all an increase in revenue of $39,000 over the previous year.

THE AMUR RAILWAY.—The Russian government has appropriated approximately Roubles 22,000,000 for the construction of this line during the year 1910. This will guarantee construction on the main line and western and eastern extension, simultaneously.

THE TIENTSIN PUKOW RAILWAY.—The Northern Section of this line has been completed to Chuang Chow and construction trains are utilizing the track for carrying material.

JAPAN GOVERNMENT RAILWAYS' ROLLING STOCK.—The Railway Board has under its jurisdiction 2,500 locomotive engines, 6,000 passenger carriages and 35,000 goods vans, and it is proposed to increase the number in each division by about 5% to meet the increased traffic.

JAPANESE STATE RAILWAYS.—The report for the first ten days of December indicate a remarkable increase of traffic. The average traffic mileage was 4,617, an increase of 83 miles compared with the corresponding period, 1908. The number of passengers was 3,012,000 which shows an increase of 622,000 compared with the figures of the previous year. The freights conveyed were 686,000 tons which show an increase of 5,000 tons. The passenger receipts were 1,014,000 *yen* showing an increase of 22,000 *yen* over the figures of the previous year, while freight receipts were 1,124,000 *yen* which shows an increase of 76,000 *yen* compared with the figures of the previous year. On the whole, there are attained favorable results. The average daily receipts are 213,000 *yen* while the average receipts per mile a day are 46 *yen* 30 *sen*.

SAIGON-HANOI RAILWAY.—Another section of this railway was opened on December 27 and the railway is now operating from Saigon for a distance of 118 miles. The construction was very difficult as the climate is very bad and many engineering difficulties had to be surmounted.

KIRIN-CHANGCHUN.—The survey of this line began from both ends the latter part of last month.

LUNGCHOU-NANNING RAILWAY.—A survey of this proposed railway has been ordered in view of the application of the French minister for permission to construct the line.

DAIREN-LACHUTAN BEACH RAILWAY—A company with a capital of yen 50,000 is proposed to build a line connecting these two points.

SOUTH MANCHURIA RAILWAY DEBENTURES.—It is proposed to issue debentures to the value of yen 40,000,000 at an early date. Out of the yen 80,000,000 issued yen 60,000,000 have been expended and the balance is being utilized in the reconstruction of the Antung-Mukden Railway. By Imperial Ordinance the company is authorized to issue debentures to twice the amount of paid up shares which enables it to issue additional debentures to the amount of yen 124,000,000.

THE CHINCHOW-AIGUN RAILWAY.—The latest advices are that the proposal made by Viceroy Hsi Liang to build a railway from Aigun on the Amur River to Kinchow on the Liaotung Gulf has been approved. The line will be 750 miles in length and extend across Manchuria. The concession is to an American company and the construction of the line will be sublet to Messrs. Pauling & Co., a British firm. The line as proposed will cross the Chinese Eastern at Tsitsihar, west of Harbin, and the Southern terminus will be a station on the Peking-Mukden line. There has been much controversy in connection with this concession, but there now seems little doubt but that it will be realized. The cost is estimated at $40,000,000.

SHANGHAI-NANKING RAILWAY SHANGHAI HOSPITAL.—This commodious and modern building erected for the use of railway employes only was formally opened January 21st. It is situated at 132 Range Road convenient to the railway station. It is a four-story building containing native and foreign wards, dispensary, matron's quarters, nurses' quarters, and is equipped throughout with bathrooms, dressing rooms, operating room, laundry, etc. Beside this hospital there is one each at Chinkiang, Quinsan and Soochow. Among those present at the opening who made addresses were Dr. Ziervogel, Chief Medical Officer of the Railway, General Manager A. W. U. Pope, and H. E. Taotai Chung Mung-yew.

THE SHANGHAI-HANGCHOW NINGPO RAILWAY.—There is a movement on foot to amalgamate this line with the Shanghai-Nanking Railway. This scheme is said to have the support of a large number of shareholders of the company.

KOREAN RAILWAY CONSTRUCTION.—The new two storey railway station at Fusan is to be opened this month. It is built of brick and is one of the finest buildings of its kind in Korea.

RAILWAY MATERIALS DUTY FREE.—Imperial sanction has been given to exempt from duty all materials for the construction of the Kirin-Kuangchengtze and the Kalgan-Suijuan Railways for a period of three years.

RUSSIAN PROJECT IN MANCHURIA.—This proposed line is to connect Hailing on the Harbin-Mikolisk Railway and Alasdoria, a point about halfway between Vladivostok and Nikolisk. It would run through Manchuria from Hailing to Hungchun. From Hunchun it would proceed to Possiet Bay and from there north to the terminus.

RAILWAY TO CONNECT CEYLON AND INDIA.—Sanction has been secured to extend the South India Railway by building a viaduct across the Pamban Channel, the railhead pushed to Daneshkidi and from there a ferry service to connect with the Ceylon extension.

RAILWAY PROGRAM IN KOREA.—The Chief of the Railway Bureau in Korea has in view the construction of two new railways, one from Tajon to Mokpoo and the other from Gensan to Seoul. The sum of 15,000,000 yen has been appropriated for the former and 16,000,000 yen for the latter. The Diet has been asked for an additional appropriation of 40,000,000 yen to be spent in the next eleven years in railway construction in Korea.

PEKIN-KALGAN EXTENSION.—It has been decided to extend this line to Swe Yuan Cheng and the sum of Tls. 17,560,000 will be made available for this work from the surplus earnings of the Imperial Railways of North China.

SOUTH MANCHURIA FREIGHT TRAFFIC.—The total freight earnings for the month of December amounted to yen 1,600,000, an increase over the estimate of over 20,000.

ANTUNG-MUKDEN LAND PURCHASE.—It is estimated that over yen 1,000,000 will be expended in acquiring lands for the right of way and stations.

BURMA RAILWAYS.—The receipts for the half year ended December 31st amounted to Rs. 79,34,832, an increase of Rs. 1,01,391 over the receipts for the corresponding period 1908. A new railway school is to be instituted at Yamethin.

NANKING CITY RAILWAY SOLD.—Taotai Chang, a wealthy Chinese of Kiangning, has purchased the system for the sum of Tls. 450,000. This transfer was necessary in order to meet the loan obligations due last month.

INDIAN RAILWAYS.—The receipts for the nine months ended December 31st amounted to Rs. 30,87,25,000 which is an increase of Rs. 1,66,-38,130 over the corresponding nine months of the previous year.

KOWLOON-CANTON RAILWAY.—The latest word on the line is to the effect that 30 miles on the Chinese section outward from Canton will be open for traffic in March and that a through connection with Kowloon will be effected by July 1st.

ROLLING STOCK FOR THE SIAMESE ROYAL RAILWAYS.—The new workshops on the Petriu line are being utilized to erect the cars which are built of teak, the axles, framework, etc., being imported from Europe. Recently nine locomotives, three passenger, two freight and four tank, were purchased in Germany. Also

a shipment received from Europe of five composite first and second class coaches, five composite guards van and third class bogie carriages has been delivered to the Northern line according to the *Siam Times*.

THE JAPANESE RAILWAY ESTIMATES.—In referring to the budget of the Railway Board Baron Goto said that the annual revenue of the board during the present fiscal year is 90 million *yen* and the expenditure about 80 million *yen*, leaving a profit af 8,800,000 *yen*, of which 500,000 *yen* is placed to reserve, so that the net profit is 8,300,000 *yen*. As to the Korean railways, their annual expenditure amounts to 5,600,000 *yen* and revenue to 5,300,000 *yen*, showing a net profit of 300,000 yen. About 5,500,000 *yen* is to be paid out for the construction of railways in Korea.

INDIAN RAILWAY OPERATION.—The ratio of working expenses to gross earnings are as follows: Indian Midland Railway, half-year, 56.08%; Bengal-Nagpur Railroad, half year, 51.18%; South Indian Railway Company, half year, 50.76%; Assam-Bengal Railway, half year, 92.07%.

CHINA'S OUTSTANDING DEBTS

The Tientsin *Times* gives the following list of loans contracted since 1885 with the amounts outstanding:

Date.		
	GENERAL LOANS	
1886	Jardine, Matheson & Co.,	£115,000 7 per cent. £48,000 outstanding.
1894	H'kong and S'hai Bank,	£1,635,000 7 per cent. £817,500 outstanding.
1895	Arnhold, Karberg and Co., Ninking,	£1,000,000 6 per cent. £466,700 outstanding.
1895	Through Chartered Bank,	£1,000,000 6 per cent. £466,700 outstanding.
1895	H'kong and S'hai Bank,	£3,000,000 6 per cent. £1,200,000 outstanding.
	SINO-JAPANESE WAR	
1895	Franco-Russian Government Loan,	£15-820,000 4 per cent. £12,427,418 outstanding.
1896	English and German Government,	£16,-000,000 4 per cent. £13,342,625 outstanding.
1898	English and German Government,	£16,-000,000 4½ per cent. £14,584,000 outstanding.
	BOXER INDEMNITY	
1901	A.	£11,250,000 4 per cent. £10,267,254
1901	B.	£ 9,000,000 4 per cent. £ 9,000,000
1901	C.	£22, 500,000 4 per cent. £22,500,000
1901	D.	£ 7,500,000 4 per cent. £ 7,500,000
1901	E.	£17,250,000 4 per cent. £17,250,000
1905	Special Loan,	£1,000,000 5 per cent. £483,333.
1905	H. and S. Bank,	£500,000,000 5 per cent.
	RAILWAY LOANS	
1898	British Loan, I.R.N.C.	£2,300,000 5½ per cent. £2,070,000 outstanding.
1896	Russo-Chinese Loan for Chinese Eastern Railway T.	5,000,000 6½ per cent. T. 5,000,000 outstanding.
1898	Belgian Loan for Peking-Hankow Railway,	£400,000 5½ per cent. £400,000 outstanding.
1898	Russo-Chinese Chin Tai Railway Loan,	Fcs. 40,000,000 5½ per cent. Fcs. 40,-000,000 outstanding.
1904	Belgian Kaifung-Honan Railway Loan,	Fcs. 25,000,000 5½ per cent. Fcs. 25,-000,000 outstanding.
1904-6	British Loan Shanghai, Nanking Loan	£2,900,000 5½ per cent. £2,900,000 outstanding.
1905	Peking Syndicate Taokow Cheng Hwa	£700,000 5½ per cent. Paid 1908, outstanding.
1907	Japanese Government Loan Kirin Chang Chun,	Y800,000 5½ per cent. Y800,000 outstanding.
1907	British Loan Kiukiang Railway,	£500,000 5½ per cent. £1,000,000 outstanding.
1907	British Loan Canton-Hankow Railway,	£1,000,000 5½ per cent. £1,000,000 outstanding.
1907	British Loan Shanghai-Hanchow and Ning-po Railway,	£1,500,000 5½ per cent. £1,500,000 outstanding.
1909	Deutsch-Asiatische Bank Tientsin-Pukow Railway,	£4,000,000 5½ per cent. £4,000,000 outstanding.

Total outstanding, £136,223,590.

CONTRACTING NEWS

BIDS OPENED, ROYAL SOUTHERN RAILWAY OF SIAM—Five tank engines and 130 steel ballast cars.—Engine Tenders:—

Société Anonyme Franco Belge, Raismes	£6,452
Manning Wardle, agents Howarth Erskine Ltd., Bangkok	8,330
Henschel & Sohn, Cassel,	5,030- 3-6
Arn Jung, Jugenthal b Kirchen	4,975
Hannoversche Maschinenbau Actien Gessellschaft, Hannover Linden	4,915-18-3
Deutsch Siamesische Handelsgesellschaft, Bangkok	4,775
Locomotivfabrik Krauss and Co. Actien gessellschaft, Munchen	4,630
North British Locomotive Co., Ltd., Glasgow	6,963
R. and W. Hamthorn Leslie and Co., Newcastle on Tyne	5,845-1
Maschinenbau Anstalt "Humboldt," Kalk bei Keln a Rhein	5,385
Beyer Peacock and Co., Manchester	7,400
Hohenzollern Actiengessellschaft fur Lokomotivbau, Dusseldorf, Grafenberg	5,400-6-3
Berlinner Maschinenbau Actien Gessellschaft vormals L. Schwartzkopff, Berlin	4,648-11
Usines Metallurgiques du Hainaut Société Anonyme à Couillet	5,278-19
Brush Electrical Engineering Co., London, Breslauer Actien Gesellschaft, fur	5,698
Eisenbahn Wagenbau und Maschinenbau, Anstalt, Breslau	4,851-16
Maschinenfabrik Eslingen in Esslingen	6,465
Société Anonyme des Ateliers Metallurgiques, Paris	5,698
W. G. Bagnall & Co., Stafford	8,524
A. Borsig, Berlin Tegel, per Windsor & Co.	4,465-10
Direction der osterreichischen werk und fabriken, Wien	4,830
Ateliers de construction de la Biesme and Bouffioulx, per Société Anonyme Belge	5,626
Compagnie de Fives-Lille, per E. C. Monod et fils Bangkok	9,808
Steel Bros. & Co. Ltd., Siam, (Lima Loco and Machine Co., Ohio)	7,120
Robert Stephenson & Co. Ltd., Darlington, per the Borneo Co. Ltd., Bangkok	7,413
B. Grimm & Co., Bangkok, (Henschel and Sohn, Cassel)	5,030-3-6
John Cockerill, Seraing, per G. Kluzer & Co., Bangkok	6,228
Orenstein and Koppel, per East Asiatic Co. Ltd.	6,428-10
Dick Kerr and Co., per Samson Dock and Engineering Co.	7,160
Mitsui Bussan Kaisha	7,892-8-10
Avonside Engine Works, per Mr. J. M. Dunlop	7,216
Kerr Stuart and Co., London, ,, ,,	8,320
Kitson and Co., Leeds, ,, ,,	8,400
Nasmyth-Wilson Co., Manchester, ,, ,,	7,932
Soc. Anonyme de Construction des Ateliers Metallurgiques, Brussels, per Mr. J. M. Dunlop	6,174-8-6
Barclay, Kilmarnock, per Bangkok Dock Co. Ltd.	7,385
Diethelm and Co. Ltd., Bangkok	7,010
Establishments Piguet and Co., per Comptoir Francais du Siam	9,160
S. A. B. for Desforges à Haines St. Pierre	6,446-10
Baldwin Co. (per Edwards and Co.)	6,076
Société St. Leonard, Liege	5,420

STEEL BALLAST CARS

Gessellschaft Harkort, Duisburg, Germany	13,034-5
Société Anonyme de Travaux, Dyle & Balacan, Paris	12,550
Midland Railway Carriage and Wagon Co. England, per Howarth Erskine Ltd., Bangkok	12,238-14-8
Jules Weitz, Lyon	8,010-16
J. Goossens, Aachen	7,458-6
The Metropolitan Amalgamated Railway Carriage and Wagon Co. Ltd., Saltley	13,226-8
C. Bulmhardt Vohwinkel Simonshaus, Vohwinkel	10,232-18
Both and Tilmann, Dortmund	8,755
Gottfried Lindner, Halle	10,560-9
Société Anonyme des Ateliers de Construction Hal., Belgium	11,512-1
Fritz Bothmann and Gluck, Gotha	17,341-19
L. I. Enthoven and Cie Pletterij, Delft	11,174-4-1
Action-gessellschaft, Weimat	10,726-4-6
Hungarian Ry. Carriage and Machine Works, per Alois Schweiger and Co., Ltd., Bangkok	10,706-16
Dusseldorfer Eisenbahnbedorf vormals Carl Weyer and Co., Dusseldorf-Oberbilk	12,883-18-10
Waggonfabrik Act-ges vorm P. Herbrand and Cie., Kehr Ehrenfeld	11,811
Canon-Legrand, Mons	10,981-3
La Brugeoise Saint Michel lez Bruges	10,371-1
Nord de la France et Nicaise & Delcuve per Howarth Erskine Ltd.	9,228
S. J. Claye, Long Eaton	12,154-2-6
Brush Electrical Engineering Co., London	9,606
L'Industrie de Lavaine	9,808-9
Nesselsdorfer Waggonfabrik Export, 7 Ringhoffer Smichow, Wien, per B. Grimm and Co.	9,172
Baume & Marpent Usines et Fonderies Haine-Saint-Pierre, Belgium, per G. Kluzer and Co., Bangkok	10,208
P. and W. Maclellan Ltd., Glasgow	16,966
Hannoversehewagonfabrik, Hannover Linden	15,397-8
Orenstein and Koppel, per East Asiatic Co. Ltd.	8,076-7-3
Van der Sypen & Charlier, Coln Deitz, Germany, per Windsor & Co. (Wood wagons £876-4-5 extra for crucible steel tyres)	8,223-7-10
Dick Kerr and Co. per Samsen Dock & Engineering Co.	16,705
Maschinenfabrik A. G. Augsburg, Nurnberg, per Behn, Meyer & Co. Ltd., Bangkok	15,353
Mitsui Bussan Kaisha	12,179-13-7
Société Anonyme Metallurgique La Nervienne Marcinelle, per A. Diana & Co.	10,940
Kerr Stuart & Co., London, per Mr. J. M. Dunlop	16,190-2-6
Leeds Forge Co., per Mr. J. M. Dunlop	24,447
Hurst Nelson & Co., Motherwell	11,908-10
Eisenwerk Gustav Trelenberg, Breslau Grabshen	14,598-9-1
Establishments Arbel., Paris, per Comptoir Francais du Siam	11,389-5-4
Gloucester Wagon Co., per Denny Mott and Dickson Ltd.	17,432-8
Usines Braines le Comte, agent S. A. B.	9,750
Nederlandsche Fabrick van Werktingen en Spoorweg Materiel, Amsterdam	13,057-5
Société anonyme des Ateliers Metallurgiques, Paris	9,307-10

China, Manchuria, Japan, Indo-China, Siam, Straits Settlements, Malay States, Burma, India, Malaysia, and the Philippines

THE FAR EASTERN REVIEW

VOL. VI. MANILA, SHANGHAI AND YOKOHAMA, MARCH, 1910. No. 10.

CHINA'S RAILWAY PROBLEMS
IN HER BORDER PROVINCES

BEANS, THE SOLUTION OF THE COMMERCIAL
SITUATION IN MANCHURIA

His Excellency CHAO ERH-HSUN, Viceroy of Szechuen.

In co-operation with his brother, H. E. CHAO ERH-PENG, he has compelled the unruly Tibetan Lamas to recognize China's authority.

The Amur Railway

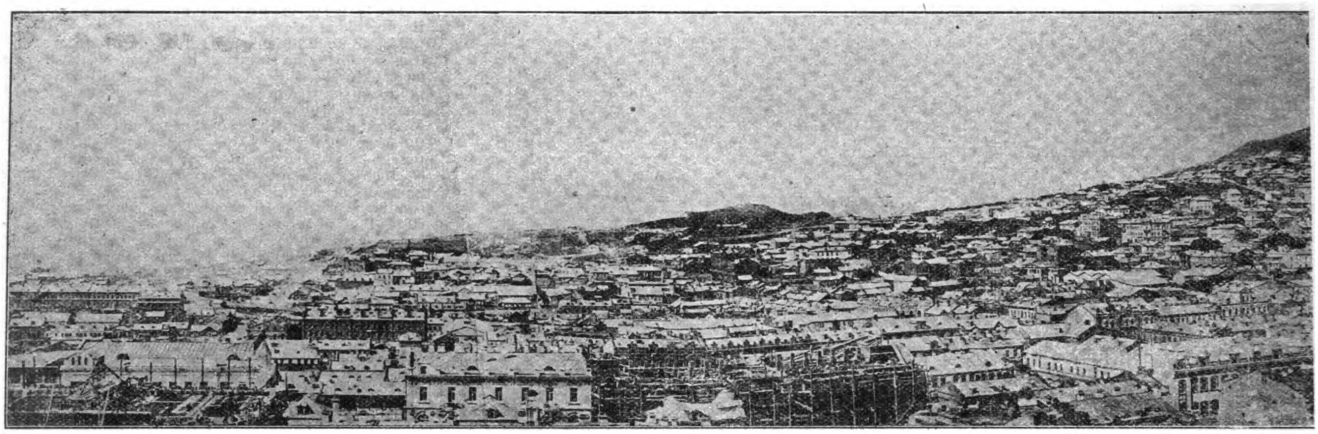
Mongolian Railways

Szechuan-Tibet Railway Project

The Yunnan Railways and Projected Extensions

The Kwangsi Railways

ENGINEERING
COMMERCE ❧ FINANCE



PANORAMIC VIEW OF VLADIVOSTOK

THE AMUR RAILWAY

Two hundred million dollars gold for a railway 1,326 miles long, or $150,000 per mile, for purely commercial reasons.

"When the cat is to be let out of the bag, commend me to a Russian newspaper for the uncompromising manner in which it is performed," commented Lord Curzon some 15 years ago. And today the same rule applies, and is emphasized by the article in the *New York Herald* of December 19th, ulto., by its special correspondent who recently completed a trip down the Amur River.

The Earl of Ronaldshay in his work "On the Outskirts of Empire in Asia," written in 1904, quotes one of the same Russian newspaper editors interviewed by the *Herald* correspondent in 1909. "Is it possible, asks the *Pri Amur Viedomosti*, that the Americans imagine that Russia has spent so much treasure and blood on Manchuria simply in order to convert it into an open bazaar? Do American editors really seriously imagine that Russian officers who have traversed Manchuria through and through in peril and suffering, constructing the railway and defending it from hordes of Boxers, that the Russian Cossacks and soldiers who have performed miracles of valor in the last Chinese war—modestly termed troubles—have suffered all this, and fallen on the field of battle, for the sake of foreign commercial firms? It was not for this that Russia has done what she has. In one word, we have fought and labored in Manchuria, *not* for the sake of open doors."

H. E. CH'EN CHAO-CHANG, GOVERNOR OF KIRIN PROVINCE, FIRST DIRECTOR GENERAL OF THE PEKING-KALGAN RAILWAY

And if Russia expended nearly $150,000,000 gold on her Manchurian Railways, and an equal amount on the building of Port Arthur, Dalny and Harbin, including over $1,200,000 as bribes to secure the lease and concession, as a preliminary to her monopoly of Manchurian trade, what object has she in view now, by the expenditure of an almost equal amount for a route to the sea 600 miles longer via the Amur River? Russian officialdom suavely assures the world that purely economic reasons compel the opening up of this barren and bleak corner of their domain, but the Russian newspaper, true to its traditional reputation, emphatically contradicts the government and corroborates foreign suspicion that the Amur road is to be built for purely strategic reasons. Against what enemy? Japan first, and China afterwards. Japan did not insist on the Antung-Mukden reconstruction, and the concession for the Kirin-Hunyun line, until after the Russian Duma had officially authorized the construction of the Amur Line. And if the peace of the East is again broken, which seems probable—the building of the Amur Railway will in a large measure be responsible for the outbreak of hostilities, as Japan's preparations in Korea and Southern Manchuria are, in the opinion of a competent Russian observer, based less upon a desire to attack than to defend.

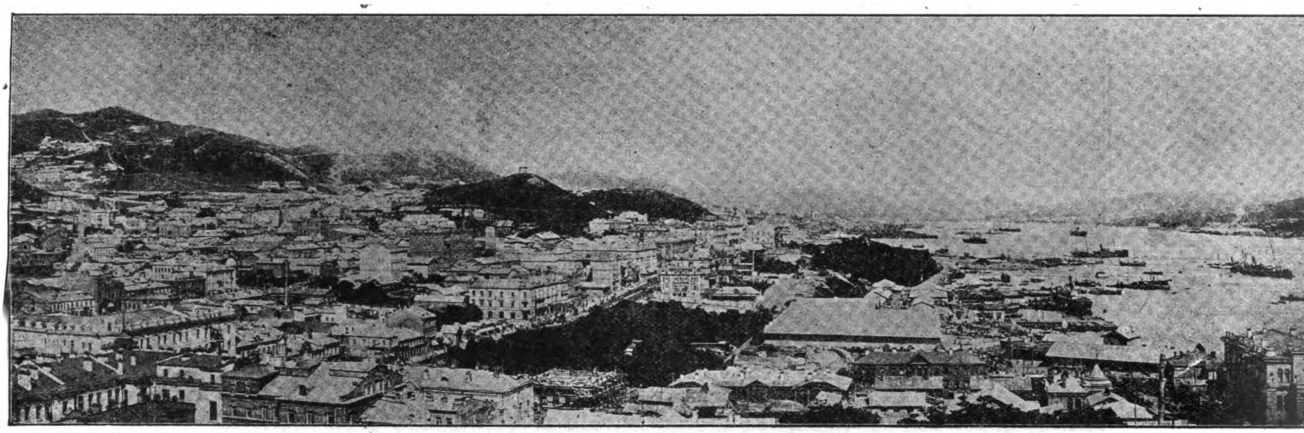
The *Herald* correspondent says:

"My impressions of a journey replete with interest at every step fall into two main groups. One is the attitude of Siberia toward the belated effort of the Russian government to realize an undertaking which, in the opinion of the opposition elements, would have eliminated the most unfortunate and depressing chapter in modern Russian history had it not been superseded by the construction of the Chinese Eastern Railway. The other is the trend of public opinion from Irkutsk to Vladivostock in its relation to Japan's feverish activities in the south.

"From the politicians, publicists and journalists of Eastern Siberia I gained a very fair idea of how the country regards the determination of the authorities to devote upward of four hundred million roubles to the opening up of a direct route through undisputed Russian territory, from Stretensk to Khabarovsk.

"Mr. N. K. Volkoff, the kadet Deputy from the non-Cossack section of the Zabaikalye in

CHANGCHUN, THE GREAT BEAN CENTER OF MANCHURIA: A MUD HOLE ON THE MAIN THOROUGHFARE



an interview which I had with him at Chita, where he was trying to obtain permission to address a meeting of his electorate, assured me that the Amur Railway was a non-party question in those regions. In the comparatively rare instances where opposition was expressed to the enterprise this opposition was based not upon a fundamental difference of opinion, but merely upon grounds of financial expediency, some holding that the national exchequer was in no fit state to stand this additional and enormous strain in the wake of the sacrifices entailed by the recent struggle.

"Precisely the same view of the situation was expressed by the editor of the leading Chita paper, the *Zabaikalskaya Nov;* by Mr. A. P. Silnitsky, the proprietor and publisher of the *Priamurye* at Khabarovsk, and by nearly every other newspaper man or politician with whom I had occasion to discuss the subject. A partial exception was furnished by Mr. V. Panoff, once a naval officer, who is a resident of thirty years' standing, a sinologue and profound scholar, proprietor of the newspaper Dalny *Vostok* at Vladivostok. Thoroughly conversant with Eastern Siberia and the Far East generally and with the Maritime and Amur provinces in particular, he is peculiarly well fitted to consider the problem in all its bearings.

"'Frankly,' he said, 'I am not sanguine as to the economic advantages of the new line, but at the moment it appears a strategic necessity. Alone, however, it is quite inadequate. In order to be of permanent value it must be reinforced by the creation of a new fleet in Far Eastern waters strong enough to cope with the Japanese, and it must be admitted that there seems to be small likelihood of this happening for many years to come.

"'In its economic relations the Amur Railway may confer seeming benefit upon a comparatively narrow strip of territory bordering the river of the same name, but beyond the shadow of a doubt the undertaking is destined to remain for many years a heavy burden on the treasury. Think, too, of the cost of equipping a powerful and independent military base in the Far East and the maintenance of a land force there really competent to oppose with any hope of success the efforts of an enemy to seize isolated portions of our Far Eastern dominions before reinforcements could hasten to the scene of operations from our centre. This point is important in view of the difference in the length of China-Japanese lines of communication via Corea and South Manchuria.

"'It is equally obvious that we cannot dispense with a fleet equivalent in the number of its units and its composition to that of any possible adversary. Land defence will remedy only the condition which has been brought about by ourselves in consequence of the opening of South Manchuria in the flank and rear of our position in the Far East. But when Japan assumed a permanent strategical position against us in Corea, if we do not wish to see from one side an entirely unopposed movement thence of Japanese armies in the direction of our borders and from the other Japanese descents upon our coast line, resulting in the wedging in, so to speak, of the whole Ussuri region as in a vice, it would certainly be senseless for us to remain without a fleet capable of offence and defence.

"'Then,' I asked, 'do you charge Japan with further aggressive designs upon Russian territory in the Far East?'

"'When Russia committed the monumental blunder of taking Port Arthur, creating Dalny and building the South Manchuria Railway,' replied Mr. Panoff, 'I foretold almost in detail what would be the outcome. As I have written in my recent brochure on the subject, a second war in the Far East will hang over us as an abiding menace, not only in the event of complications in the Far East itself, but also in connection with those collisions of conflicting interests of the Powers in Europe, which are nowadays so frequent. For Russia in the Far East this is a sore and open spot which none of her serious antagonists or rivals in international politics can afford to overlook, nor will they let slip any convenient opportunity of tying her hands by means of her position in the Far East.

"'As regards Japan, I would not be quoted as declaring that she deliberately contemplates a policy of aggression against us. In my opinion Japan's preparations in Corea and Southern Manchuria are perhaps based less upon a desire to attack than to defend. Doubtless Japan anticipated the possibility of Western intervention in Corea and the demand for a protectorate there of the Powers. Thus the more firmly she is established in the peninsula the less likelihood will there be of any such intervention.

"'Again, it is obvious that in the event of such united action against Japan Russian co-operation from the land side would be indispensable, so that any Japanese scheme of defence in Corea and Southern Manchuria must take into consideration Russia's position in the north in conjunction with the strategic potentialties of the Amur Railway.

"'On her part, Russia, who made the mistake before and during the war of persistently regarding Japan as an Asiatic Power in the military and naval sense, is at last fully alive to the truth, and the necessity of strengthening the defences of Eastern Siberia is theoretically recognized, although very little of a really practical nature has so far been accomplished.'

"Mr. Panoff estimated that there could not be more than one hundred and fifty or two hundred thousand troops of all arms in that part of the country, a force totally inadequate as a guarantee against the attack of a skilful and resolute foe. I am aware that many amateur foreign observers have assigned to Eastern Siberia a far larger garrison than the above, but it would be impertinent to question the knowledge of a man like Mr. Panoff in this field.

"'Japan,' continued Mr. Panoff, 'naturally anticipates the recuperation of Russia in the course of time, and with her customary farsightedness is making preparations for every conceivable emergency, both in Corea and Southern Manchuria. Japan understands as well as we do that, for many years at any rate, her only possible opponent on the continent will be Russia, while the latter, on her part, will hardly dream of entering upon a second policy of aggression single handed.

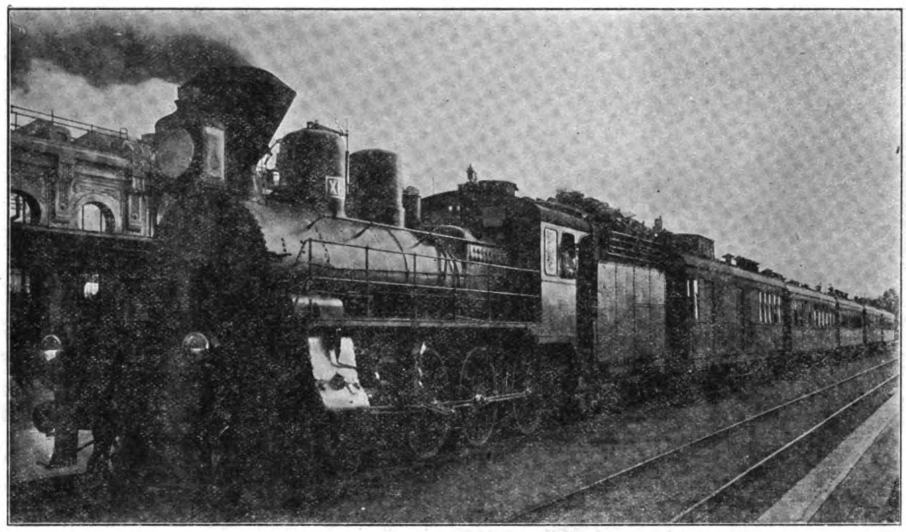
"Still, as the same publicist has pointed out in his recent masterly summary of the past and present situation in the Far East, the Siberian boundary under Russia's very eyes is being converted into a continuous and unbroken line of Japanese bayonets. The strategical position of Manchuria, created by Russia's own policy of extending the Chinese Eastern railway south to Port Arthur and Dalny, strengthened by the new Japanese line from Antung to Mukden and the Chinese line to Hsinmintun, has actually transformed that boundary into an extensive road for offensive action against Russian confines and has invested it with the qualities of a possible battering ram, destined, as he puts it, at a given moment to shatter the weak link between the Zabaikal and Ussuri regions and to cut off Russia's advance supports in the Priamurye from her political and strategical rear.

"I cannot say that I detected anywhere in Eastern Siberia tangible evidences of active hostility toward the Japanese, who manage to make a comfortable livelihood, in gradually growing numbers, from Chita to Khabarovsk and Vladivostok, as barbers, photographers, laundrymen, small traders and, if the truth must be told, to no inconsiderable degree as caterers of vice.

"At the same time it was the exception to meet anybody who did not regard Japan's progress in Southern Manchuria with suspicious eyes. One alarmist at Vladivostok stated it as his firm conviction that Japan would capture that port in ten years at the outside. The better informed, however, are fully alive to Japan's political and economic embarrassments vis-a-vis China and the Powers.

"While it is recognized that China has no special love for the Japanese, it is equally patent that she has no reason to be grateful to Russia, and it is this factor of the situation which causes belief in the possibility and probability of a joint Japanese-Chinese movement against the Zabaikal, Amur and maritime provinces in the near future.

"Although Mr. Panoff in his conversation with me declined to share the popular belief in the intention or ability of China to win back by the sword territories which she ceded to Russia under the Aigun treaty, and characterized the striking expansion of the immigration movement in Mongolia and along the right bank of the Amur as purely economic, he, together with other writers, has called attention elsewhere to the fact that Mongolia has begun to threaten the Zabaikalye; that Chinese lines of railway are being built or projected to the very banks of the Amur; that a Chinese town



THE CHINESE EASTERN EXPRESS TRAIN PULLING OUT OF HARBIN

is contemplated at the mouth of the Sungari; that the middle stream of the Amur itself is open to Chinese steamship navigation: that the portion of the Manchurian railway which remains in Russian hands in the west is said to be already passing under the supervision and control of Chinese garrisons. In other words, it is contended that the 'rights recovery' or 'Young China' movement is nowhere more clearly defined and insistent than as against Russian pretensions.

"In spite of the provisions of the Aigun treaty, for example, the Chinese authorities have presumed to impose duty upon Russian goods on the right bank of the Amur and on the Sungari, the protest of the Russian Minister in Pekin being ignored.

"If Mr. Dick could not keep King Charles' head out of his memorial, it is equally impossible for the majority of Russians in the regions under review to refrain from ascribing many of these sinister symptoms to Japanese influence. China, it is said, under the aegis of Japan, is following the line of least resistance, which is Russia.

"I can myself testify that quite a small city has already sprung into being immediately opposite Blagoveshchensk, on the Chinese bank of the Amur, at a spot where, as recently as the Boxer outbreak, there were few signs of human habitation. I am told that the Chinese are energetically working on a military line in the same direction, while on the Russian, or left bank, there is not so much as a single railroad, since it is as yet premature to speak of the Amur line, which, under the most favorable auspices, cannot possibly be finished in less than seven years.

"As intimated above, the Chinese garrisons in Manchuria are growing, both along the line of the Chinese Eastern Railway and neighborhood and that of the Mukden-Harbin branch. Against whom, it is asked, is China strengthening her northern boundary?

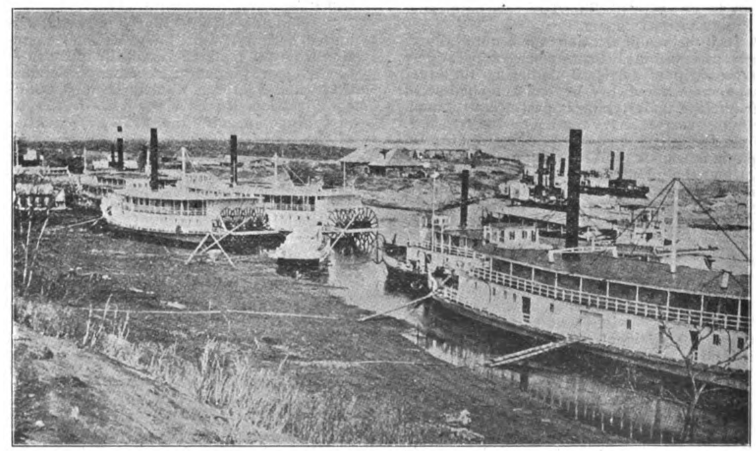
"The facts concerning the Amur Railway can be very briefly summarized. The nominal starting point of the new line is at Koinga, a station situated between Nerchinsk and Stretensk, on the banks of the Shilka, which flows into the Amur, and its terminus is to be Khabarovsk, at the confluence of the Amur and Ussuri rivers, a distance of approximately 2,200 versts, with a branch to Blagoveshchensk, perhaps 120 versts from the trunk line.

"Undoubtedly, too, other smaller branches will be pushed out from the main line to the Cossack stations on the banks of the river, and one of these, at Chasovinskaya, between Stretensk and Blagoveshchensk, is now completed and is being utilized for the conveyance of materials to the trunk line, about twenty or thirty versts away. Large stacks of rails, sleepers, bolts, rivets, nails, etc., together with a considerable quantity of rolling stock, bear testimony to the fact that work is actually proceeding, though no rails have yet been laid on the trunk line.

"At the time of my visit about six thousand Russian laborers were employed on the construction work, and from the spring of next year it is affirmed that the taiga (Siberian bush) will be roused by the arrival of fresh bodies of men, to the number of fifteen thousand, in addition to several hundreds of constructors, contractors and clerks. Although the exclusive employment of Russian labor, as far as the actual construction work is concerned, will involve an enormous increase of the cost, the Duma nevertheless decided that Chinese labor should not be made use of, and as the Russian population of the district is itself too meagre to furnish the number of hands required, the bulk of the latter has to be imported from European Russia.

"The engineering difficulties to be surmounted are very great. Even on horseback it is not possible to cover more than five versts an hour in many places. The scenery, however, is superb, and when the line is finished it will certainly become popular among travellers. Gold has already been discovered by the surveyors of the route in fairly large quantities, and some of the diggings are being worked. The precious metal is for the most part as fine as dust and demands very highly perfected machinery for its successful exploitation. Other portions of the area being opened up by the railway are reported to be suitable for cattle raising.

"In the light of the fact that the operation of the Siberian Trans-Baikal and Circum-Baikal lines involves an annual deficit of twenty million rubles and that the Priamur Province generally



THE AMUR RAILWAY, AMUR RIVER STEAMERS TIED UP FOR THE WINTRE

IRKUTSK, THE CENTER OF RUSSIAN POWER IN ASIA

entails a further drain upon the exchequer, it would be foolishly optimistic to reject the evidence of those on the spot with reference to the economic prospects of the new Amur Railroad. These witnesses are often persons, as in the case of Mr. Panoff, in other respects supporters of the government and in no sense to be confounded with the kadets, social democrats and social revolutionaries, from whom pessimism might be anticipated, but who, for the most part, when they live in Eastern Siberia, are in favor for once of a government railway project from provincial and sectional rather than imperial motives.

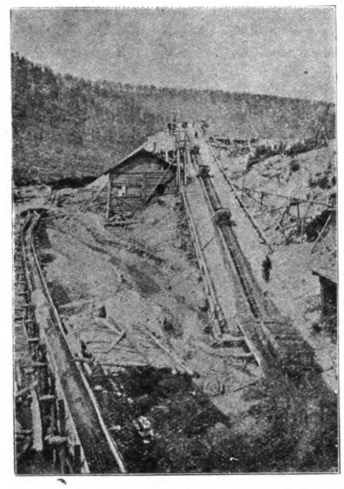
"The consensus of disinterested opinion would therefore appear to warrant the conclusion that the determination of the Russian government to expedite the building of the line at a moment of unusual financial stringency is dictated, despite official assurances to the contrary, rather by strategical than economic considerations. It is a race in railroad construction. The rebuilding of the Antung-Mukden line, in particular, convinces most Russians that Russia cannot afford to dally with this question.

"Japan proposes to finish the work in two years, and with the completion of the bridge across the Yalu linking the Corean and South Manchurian railway systems she will have at her disposal a direct and unbroken line of communication virtually from the shores of Dai Nippon to the very heart of Manchuria, debouching on the flank of the sole Russian line which unites the Far East with Russia proper.

"'Then,' as one Russian paper writes, 'our Chinese road will lose the commercial significance preserved for it by the Portsmouth treaty. Should complications arise with Japan it can be cut at will by the Japanese advance guards freely conveyed by rail to this point. Thence the route is optional either to the east or west. In this manner Japan has securely strengthened herself on our flank and the road to the Primorsk region, where there is not a single hopeful point of support, is open. The transfer of the Fushun mines to the full ownership of Japan testifies to the fact that Japan stands upon firm ground and that a base for further operations is prepared for her.'

"Prone as is the typical Russian mind to analyze and disparage everything Russian, it behooves the outsider to qualify to some extent the gloomy forebodings of the critics I have quoted. In spite of all the sins of omission and commission charged to the government, the fact remains that there is progress in Eastern Siberia palpable to those who visited the country immediately after the war and who visit it now.

"The population of such towns as Chita, Stretensk, Nerchinsk, Blagoveshchensk and Khabarovsk is steadily increasing; the general average of comfort and well being is far higher



AMUR RAILWAY: GOLD WASHING PLANT ON THE AMUR RIVER

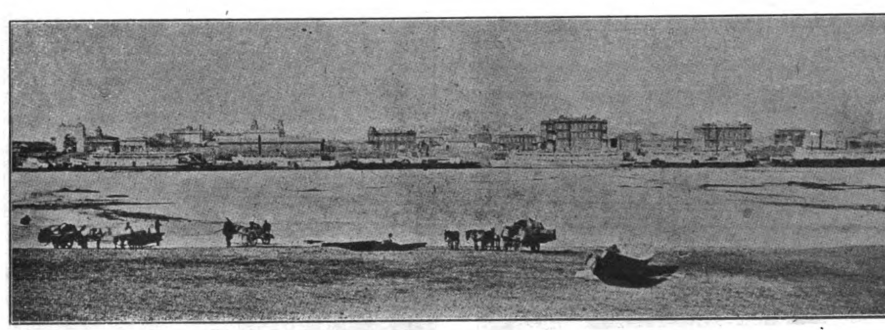
than in European Russia; the foreigner is struck by the health and good looks of the rising generation; everywhere is manifested the popular zest for education, and the authorities, inadequately it may be, are encouraging immigration.

"I am convinced that with the construction of the Amur railway it should be worth while for American capitalists and business men to devote more attention to the Amur and maritime provinces of Eastern Siberia with a view to the development of the vast natural wealth of the country. Coal, gold, silver, iron, lead, naphtha, lumber, the fisheries, the pelt industry and agriculture—all these branches should offer inducements to enterprising investors. That there are serious obstacles to be overcome cannot be denied, but when one notes what is being accomplished by the Germans in Eastern Siberia and Northern Manchuria it is difficult to resist the conclusion that we are losing opportunities.

"Withal the conviction forces itself that had the heritage of Eastern Siberia fallen to America or Great Britain, with its enormous potential resources, it would not now, after three hundred years of ownership, contain a population, both Russian and native, of only a million and a quarter, scattered over an area of one million four hundred thousand square versts, approximately equivalent to three Frances without the colonies. The cry of the 'old resident' (starozhi) of Siberia is that St. Petersburg should listen to the voice of those who live and labor in the land, as is the case under English and American colonial administration, whereas Russian Far Eastern questions are for the most part decided by the departments at St. Petersburg, which seem to be destitute of first hand knowledge of the needs of the region—as witness the abolition of the Vladivostock free port which was an unsolicited gift to Japanese Dairen."

SNUG HARBOR AT PORT BANGA

The Port Banga Lumber Company of Port Banga, Mindanao, has developed a snug harbor at its mill site and, with the addition of a lighthouse installed on the summit, it is easily and safely available to steamers entering and leaving the harbor at night. The company's dock is 150 feet in length with 20 feet of water at low tide alongside, and with the mill and yard close to the dock it makes the most desirable mill site in the Philippines. The harbor is snug with plenty of water and good anchorage. North German Lloyd steamers find no difficulty in entering the harbor and tying up at the dock, while the Compañia Maritima steamers call regularly twice each month.



BLAGOVESHCHENSK, THE METROPOLIS OF THE PRIAMUR

RAILWAYS IN MONGOLIA

China's Ambitious Plans to Preserve and Develop this Vast Territory

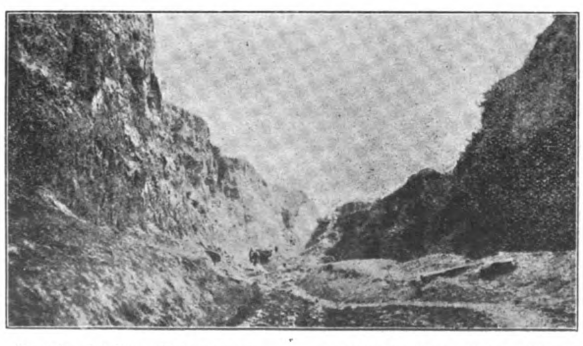
With the completion of the Pekin-Kalgan Railway, opening up communication with the Mongolian borderlands, many new extensions to the line are being projected. If all the schemes are carried into effect, Kalgan will one day be one of the most important railway centres of the Empire. The right to build a railway across Mongolia from Kiachkta through Urga to Kalgan has long been a cherished dream of Russia, and her diplomats at Peking have many times urged China to grant the concession. Ten years ago the Russian railway program for the peaceful invasion of China included several ramifications to this central scheme, chief of which was a branch leaving Kiachkta crossing Mongolia, Shensi, and Szechuen, terminating at some point in connection with the proposed northern extension of the French Yunnan road at Chengtufu. This bold and seductive scheme was the natural outcome of the combination of Russian and French railway plans in Asia. Ten years ago such a plan had some hope of ultimate sealization, to-day it must remain a dream, as aside from the enormous financial and engineering difficulties, China will never give her consent. Yet Russia has never entirely abandoned her original designs for the penetration of Chinese Central Asia.

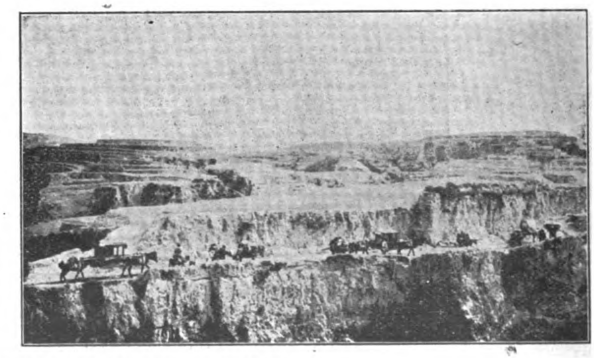
RUSSIAN RAILWAY ACTIVITY.

The great Trans-Siberian road was still unfinished when the scheme for a southern or Central Asian parallel line was proposed. This line was to leave Orenberg and cross the Turgui country and the Kirghiz steppes in an almost due easterly direction to Barnaul in southeastern Tomsk, or within easy communication with Kobdo, in Chinese Mongolia. From Barnaul the line was to be carried still farther east, skirting the Mongolian border until a junction was made with the Trans-Siberian Road at Nijni Udinsk. The unproductiveness of the Turgai country and Kirghiz steppes prohibited the execution of the scheme and for some years the project has remained dormant. But almost coincident with the recent announcement of the scheme to double track the Trans-Siberian road comes the report from St. Petersburg that the Southern Siberian Railway Company has been organized for the purpose of constructing a line starting from Omsk and skirting the Irtish River to Pavlodar, where one branch will continue to Semapalitinsk and another to Barnaul. The total length of the proposed road is over 750 miles and the cost is estimated at over £5,000,000. From a strategic viewpoint this will bring the Russians within a few days' march from Kobdo, the Chinese frontier post of North Western Mongolia, and at the same time open up an immensely fertile and valuable mineral country. With previous experience as a guide the Chinese Government naturally views such a scheme with some concern and

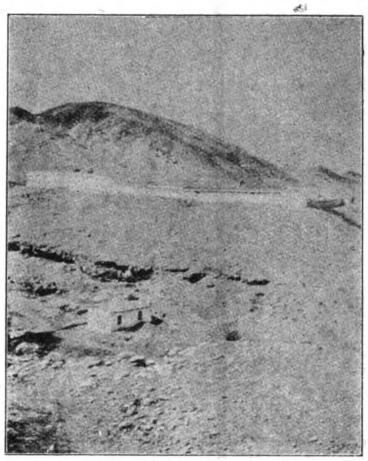
H. E. CHEN KUEI-LUNG

VICEROY OF CHIHLI, THE METROPOLITAN PROVINCE, PROMOTED FROM THE VICEROYALTY OF THE HU-KINANG, TO CHIHLI, ON THE DISMISSAL OF H. E. TUAN FANG





(*Denniston & Sullivan, Photographers.*) THE ROAD TO LANCHOWFU: ACROSS THE LOESS REGION OF SHANSI



THE RUSSIAN OUTPOST COMMANDING THE ROAD TO KASHGAR, FORTIRKESHTAN TURKESTAN

steps are being taken to have a preliminary reconnaissance made for a Chinese railway to extend from Kalgan into the threatened district. It is reported that a line traversing Mongolia from Kalgan, through Chahar to Sairussu and thence to Uliassutai has received serious consideration and delegates appointed to survey and report on its feasibility. The distance is about 1,000 miles from Kalgan to Uliassutai.

Russian military railway and commercial activity along the Mongolian borders of the Empire has for many years past seriously alarmed the Peking authorities, and, as a remedy, many vague and visionary railway schemes have been proposed as the only way the distant provinces can be saved to the Empire. The Russian Central Asian military railway terminating at Andijan already threatens the province of Sinkiang or Chinese Turkestan, and as a consequence the Chinese frontier posts of Ilifu, Aksu and Kashgar have been heavily reinforced.

CHINESE PROJECTS.

A recent native report from Peking states as follows:

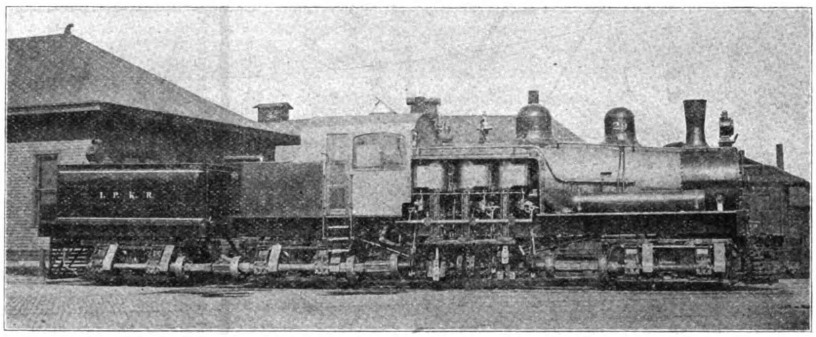
"The Minister to a certain country has addressed a long letter to the Central Government on the danger of Ili, citing instances to prove a certain Power's designs on that Dependency, and declaring that if the *laissez faire* of the officials be allowed to continue for another few years it will be worse than Manchuria."

To this constant danger of the remote provinces is traceable many of the railway schemes which find currency in Peking official circles and echoed in the native press. The following recent news items have their foundation in political scares:

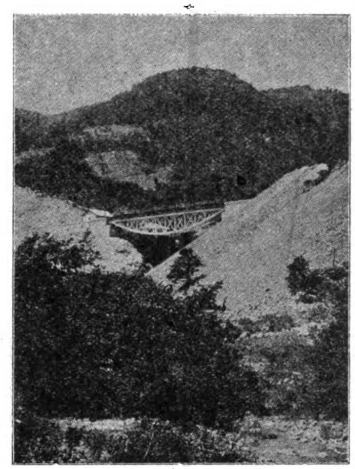
"The President of the Board of Posts and Communications, after consultation with the Government, has decided to raise funds for the purpose of constructing a railway from Tih-hwa (Urumtsi) in Sinkiang to Kurun (Urga) in Mongolia and one from Ili via Tih-hwa to Lanchow (Kansu). He has wired the new Viceroy of Kansu to make the necessary investigations after he has taken over the seals of office.

"The Yueh'uanpu proposes to extend the Kalgan-Suiyuan Railway to Ili and also to connect it with the Loyang Tung-kuan Railway in Shansi.

"A Chinese telegram says that the Government intends to relieve the famine sufferers in Kansu by utilising their services in building the railway from Kansu to Chinese Turkestan (Ili) and that the scheme will be carried out after Viceroy Chang Keng has assumed office."



SHAY GEARED 125-TON LOCOMOTIVE, LIMA LOCOMOTIVE & MACHINE CO., IN USE ON THE PEKIN-KALGAN RAILWAY



A BRIDGE ON THE RUSSIAN CENTRAL-ASIAN RAILWAY

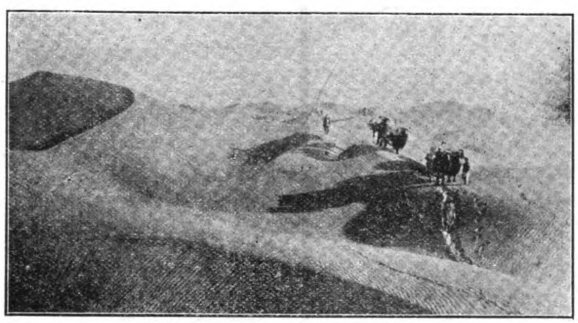
These extensive railway schemes are published in the Chinese papers as a matter of course, without comment, and no thought apparently given to cost or difficulties of construction. In these few items already noted, there are over 3,800 miles of railways to be constructed for strategic purposes.

	Miles.
Kalgan-Uliasutai Railway....	1,000
Urumtsi-Urga Railway.....	1,200
Ili-Lanchow Railway.....	1,600
	3,800

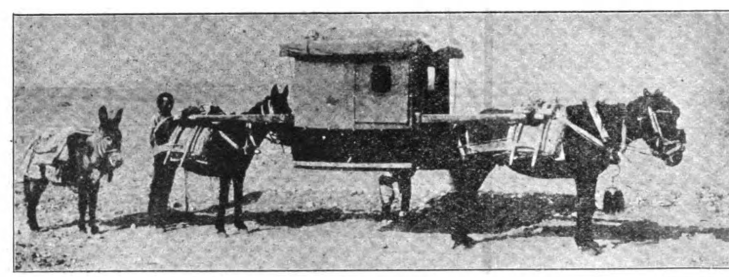
At a cost of $40,000 gold per mile, the total expenditure would be $152,000,000 which, spread over a period of ten years, would be over $15,000,000 per annum. Such an expense could hardly be justified with the present state of the finances. So while there is little probability of the general scheme being carried into effect, there is evidence that the most important or the line to Ili, will be pushed ahead as rapidly as finances will permit.

KALGAN-SUIYUAN EXTENSION

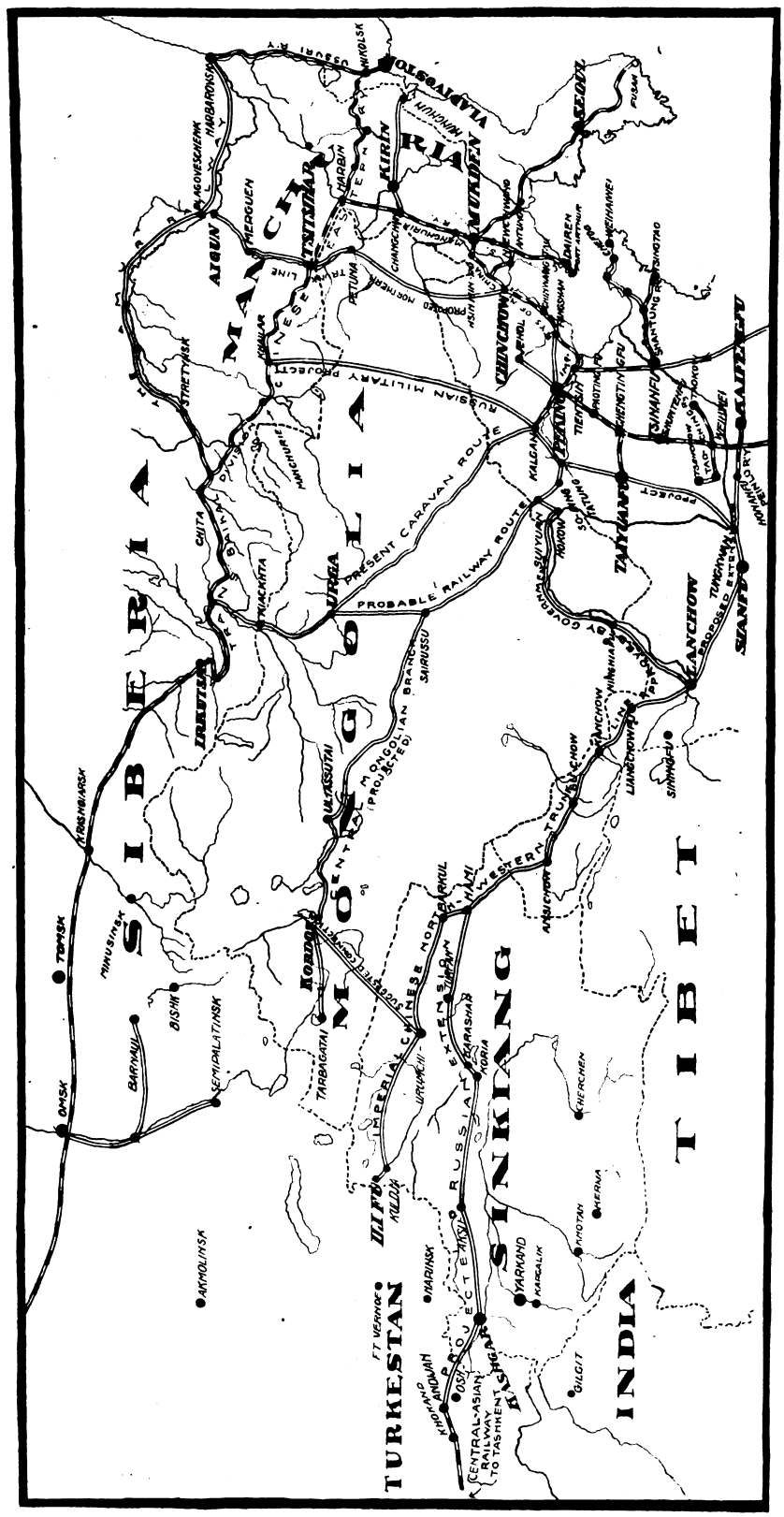
The recently completed Kalgan road is to be extended via Tatungfu and Sopingfu to Suiyuan in the northwest of Shansi Province near the Mongolian border. The survey of this road has been completed. It will be about 230 miles long, and the estimates submitted to the Board of Communications places the cost at about Taels 17,560,000 or roughly $50,000 to $55,000 per mile. The necessary capital will be taken from the surplus profits of the Imperial Railways of North China in the same way as was done for the Peking-Kalgan road. The construction of this extension has already been



(*From Travel.*)
THE ROADS OF SINKIANG: ACROSS THE TAKLA-MAKAN DESERT



ACROSS EASTERN MONGOLIA: CHINESE PONY PALANQUIN



MAP SHOWING RAILWAY LINES PROJECTED IN MONGOLIA

Baldwin Locomotives for the Tientsin-Pukow Railway, China

The Baldwin Locomotive Works has recently shipped to China two Mogul locomotives intended for general road service on the Tientsin-Pukow Railway. The track gauge is standard, and when compared with many six-coupled locomotives used on American roads, this design appears of moderate capacity, as the tractive force developed is 22100 pounds. The engines are, however, admirably adapted to the service required. It may be noted in this connection that while comparatively few Mogul locomotives are being built for the principal American lines, there is a steady demand for this class of power from foreign roads.

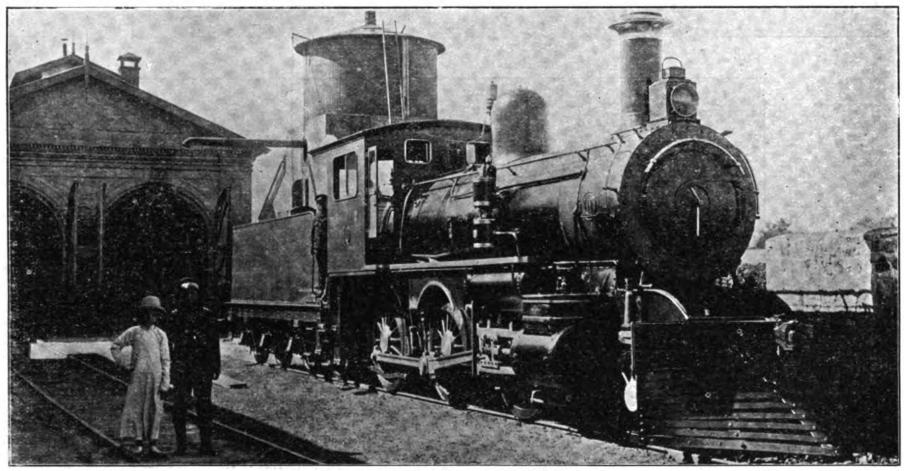
The engines under notice have straight topped boilers with inside fire-boxes of copper. The crown and sides are in separate places, and the tube sheet is increased in thickness from ½" to ¾" over the area where the tubes are inserted. The staybolts are of copper. The fire-door opening is formed with a ring, which is riveted between the inside and outside sheets. The barrel is composed of two courses, and except for the construction of the dome, presents no unusual features. The dome body is of pressed steel, and is bolted to the dome bass. As the body can be easily removed, the throttle valve and its operating mechanism are readily accessible. The dry pipe is of copper.

The boiler is equipped for burning bituminous coal. The grate is of the rooking type with drop plate, and the fire-box contain a brick arch supported on studs. The smoke-box is extended, and is fitted with netting, an adjustable diaphragm plate, and a high double nozzle. The stack is straight, 18 inches in diameter.

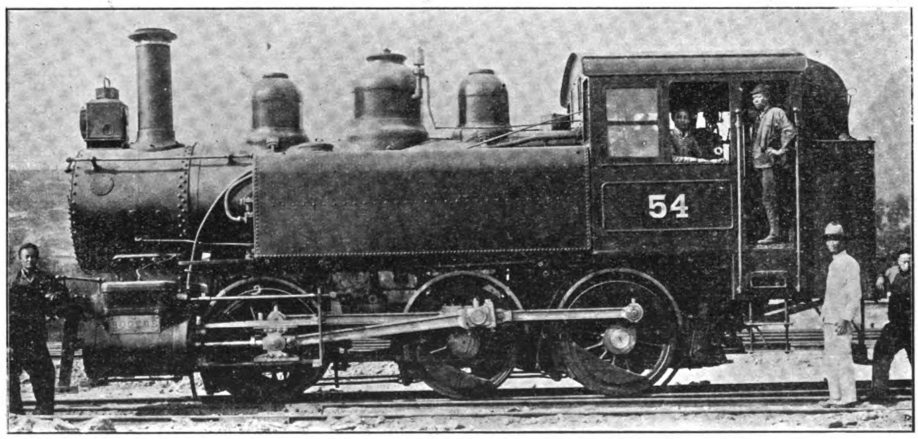
In many respects the most interesting features of these locomotives are the frames and running gear, which are designed, to a large extent, in accordance with foreign practice. The frames are of mild steel plate, 1-¼" thick, and rolled in one piece for each side. With this construction, the fire-box can be placed above the rear driving axle and between the frames. It can thus be made of ample depth, and of nearly the same width as the usual type of narrow fire-box when placed on top of bar frames. The frame pedestals are bolted in place, and, together with their binders, are of cast steel. The driving springs are underhung, and the loads on the main and rear drivers are equalized through beams fulorumed under the frames. These beams are of cast steel, with an I-section. The front drivers are equalized with the engine truck as in American practice.

The driving boxes are of steeled cast iron, and the driving wheel centers are of cast steel. The truck wheels are steel-tired, with cast steel centers.

Each cylinder is a separate casting, and the saddle, which supports the boiler and occupies the space between the frames, is made in one piece. The cylinders and saddle are lipped on top of the frames and securely held together by horizontal holes. The steel distribution is controlled by Richardson balanced slide valves, driven by Walschaerts motion. The links are trunioned on casting bolted to the guide bearers. The latter are of cast steel, each being formed



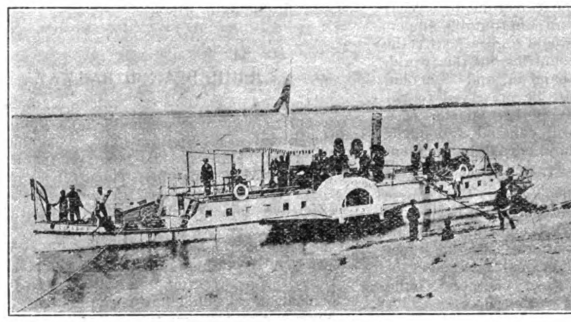
BUILT AT THE TONGSHAN WORKS OF THE I. R. N. C.



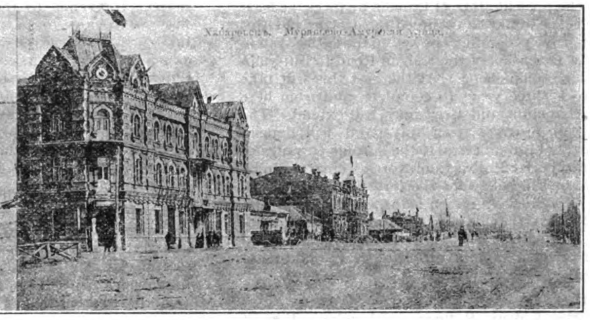
SADDLE TANK LOCOMOTIVE FROM THE ROGERS LOCOMOTIVE WORKS OF PATERSON, N. J.

authorized and it is expected that actual work will soon be commenced under the direction of H. E. Jeme Tien-yu. It is hoped to complete it in two years. From Sui-yuan is planned the extension to Urga, a distance of 600 miles across the Mongolian desert. Built under Chinese supervision this line should not be very costly, as there are no great engineering difficulties to overcome.

Consul-General Edward T. Williams, of Tientsin, recently furnished the following information concerning the proposed building of the Kalgan-Urga Railway. As the Kalgan line has been built with the surplus profits of the Pekin-Mukden line, it is proposed to employ future earnings of the latter line in the extension across Mongolia to the Siberian frontier. The Mongols are mostly nomads, and depend upon their flocks and herds. It has been estimated that 25,000 horses, 10,000 head of horned cattle, 250,000 sheep, 330,000 hides, and a considerable quantity of furs are exported every year from Eastern Mongolia, while from North-Western Mongolia as many as 70,000 horses, 30,000 camels, and 1,500,000 to 2,000,000 sheep are exported. With the completion of the railway to Kalgan the appearance of long trains of camels in the streets of Peking will become more rare, and as the line penetrates into Mongolia, more and more of the traffic will find its way by rail. Such a line will also do for Mongolia what our transcontinental lines have done for our Central and Western States. Few persons realise what a vast territory there is here for settlement and development. Its area embraces more than 1,300,000 square miles, and the population is not quite two to the square mile. The lands belong to various tribes of Mongols, each of which has its own chief and its own organisation. The people are not unlike our Indians, though their culture, on the whole, is of a higher type, as is indicated, indeed, by their pastoral life. Chinese settlers are continually crowding into these territories and purchasing lands from the Mongols. New counties are continually being organised along the Chinese frontier, and the jurisdiction of the Chinese authorities being thus steadily extended into the dependency. The construction of the proposed railway will doubtless hasten the settlement of the country, the cultivation of its fertile valleys, and the exploitation of its extensive forests and its mines. Communication with Europe will also be facilitated, inasmuch as the connection with the Great Siberian Railway will be made not far from Lake Baikal, and the time between Peking and New York—now about twenty-five days *via* Moscow and London—will be reduced to about twenty-two or less.



CHINESE EASTERN RAILWAY STEAMER PLYING ON SUNGARI RIVER BETWEEN HARBAROVSK ON THE AMUR



BUILDING ON AMUR STREET, HARBAROVSK

THE TRANS-MONGOLIA RAILWAY

The Kiachta-Urga-Kalgan or Trans-Mongolian Line was originally conceived by Russia to serve her political and commercial designs, and although China now proposes to build the line within her own territory, Russia desires participation in the enterprise. The route has been partially surveyed and numerous reports submitted to Peking. The chief obstacle to its construction is the alleged lack of water on the Gobi desert. Mr. Archibald Little in his book on The Far East, however, states as follows:

The 200 miles wide stretch of undulating land along the northern border, which is traversed by the high road between Kiachta and Urga is distinguished by abundance of trees and water. But south of Urga, which is situated 4,200 feet above sea-level, the gravelly steppe begins, a steppe in part flooded with fragments of agate and chalcedony, and the confines of the Gobi are entered; the soil still support scattered desert shrubs and water is obtainable by well-sinking. Here is no remorseless sand-waste with its waves of moving sand such as are found to the south and west of the Altai and its eastern prolongation the Gurhan Saikhab, the range that may be looked upon as the backbone of the plateau, and which forms a rough dividing line between the Eastern and Western Gobi. The Eastern Gobi slopes from its marginal mountains to a depression in the centre, elevated only 2,400 feet above sea-level, probably the dry bottom of an ancient salt lake, into which the now dried-up watercourses, with which the ravines of the projecting rocky ridges that traverse the steppe are scored, drained at a time prior to the recent desiccation of the country.

South of this depression the land rises again to 5,400 feet, as the Alpine range is reached which limits the steppe in this direction of China. The ranges which wall in China on the north and are 100 to 150 miles in through-diameter are Alpine in character and contain many fertile valleys, all occupied by Chinese settlers; such valleys we find south of the frontier mart of Kalgan, 2,800 feet above the sea, built on the southern slope of the mountain range, through which breaks the narrow pass leading up by a farther ascent of 2,000 feet to the plateau which commences 10 miles to the north, the only road giving easy access, by a comparatively gentle descent to the wide Peking plain below. This descent from the plateau into the low-lying plain of Chihli, via Kalgan, is by the most gradually sloped and easily traversed of all the main roads leading from Mongolia strongly fortified by the Chinese; it is also the route in which the transition from the rugged mountain rampart to the level grass-covered table-land is most striking and abrupt. The Peking plain which slopes seawards from the foot of the mountains at the impereeptible inclination of about one foot to the mile, abuts directly upon the cliffs of the barrier range, giving unmistakable evidence of these having once formed the sea-coast of the to-day still steadily narrowing gulf of Pechili.

While China is proposing to build the road, Russia is also preparing to push out a branch from the Trans-Siberian Line near Lake Baikal, to the frontier mart of Kiachta. The distance along the Selenga valley to Kiachta is only a little over 100 miles. The line would be a commercial success and promote the trade of Mongolia with Trans-Baikalia.

The main road from Sui-yuan across Mongolia to Urga, is about 600 miles, and another 175 miles to the border at Kiachta. A rough estimate submitted to the Board of Communications calls for Taels 20,000,000 or approximately $25,000 per mile, and six years time to construct the line beyond Sui-yuan to Urga. Under Chinese supervision this figure, while low, compares more than favorably with railway costs in other more difficult sections of the Empire. With a construction progress of 100 miles a year or six years to complete, this would entail an expenditure of about Taels 3,400,000 per annum.

It is reported that foreign capitalists are ready to loan the necessary funds for constructing this line, whenever China signifies her willingness to negotiate terms.

The extension of the Kalgan Road to Sui-yuan may therefore be accepted as the first step in China's railway program for the construction of three important trunk lines. The Kalgan-Kiachta or Trans-Mongolian and the Kalgan-Uliassutai or Central Mongolia roads have already been outlined. The third and most difficult, and from some points of view the most important, is undoubtedly the great Central Asian project or the North-Western trunk line through Kansu to Chinese Turkestan which has been approved by the Government.

THE CENTRAL-ASIAN PROJECT

One of the most difficult and costly railway schemes entertained by the Chinese Government is the much discussed Kansu-Ili line. Many items are published in the native press from time to time, indicating there is something behind all the talk. The fact that Lanchow, the capital of Kansu province, is one of the most inaccessible cities of the Empire, and delivery of railway material to that point would entail enormous expense and delay, is apparently ignored by the Chinese. The proposed railway from Lanchow to Ili has always been considered by the average foreigner as a dream of the future to be built after the Pienlo Railway is extended on the Tungkwan, and thence to Sianfu, and from there to Lanchowfu. The distance from Honanfu, the present terminus of the Peinlo Line—through Tungkwan, Sianfu and Fenghsiangfu to Lanchowfu—is approximately 550 miles. The country traversed is a most difficult one for railroading and the provincial authorities and gentry show little enthusiasm in raising funds to construct the line.

The purpose of the central Government at Peking seems clearer and the dream of a Kansu-Ili line becomes more tangible when it is considered that the distance from Sui-yuan to Lanchowfu following the course of the great bend of the Yellow River is only about 600 miles, and through a country almost level and presenting no great engineering problems to overcome. The 600-mile road to Lanchow via Sui-yuan could be constructed at almost half the cost of a Tungkwan-Sianfu line, and its supervision remain entirely under the control of the Board of Communications, free from interference from the provincial gentry. So when we read that the Viceroy of the Shen-kan intends to utilize the famine sufferers in building the road to Ili, while some allowance must be made for exaggeration, the report or rumour may be accepted as an indication that some definite plan is being slowly welded into shape. The Viceroy at Lanchow has repeatedly memorialized the Throne about the importance of maintaining better communication with Ili, if the province of Sinkiang is to be saved to China. Ili is a long distance from Lanchowfu. The old trans-Asian caravan route from Lanchow to Ili over the Great Tien-shan North Road is over 1,500 miles. So to reach Ili by rail from Peking, the Chinese Government must extend the Kalgan-Suiyuan Railway about 2,100 miles at an expenditure of at least $40,000 gold per mile or a total of $84,000,000. The rate of progress on such a road must necessarily be slow, and 15 years at least would be necessary for its construction, or an annual expenditure of say $6,000,000 gold.

In addition to the above schemes for the protection of her Mongolian and Turkestan borders must be added the project for the Eastern Mongolian or Chinchow Tsitsihar-Aigun Line, the history of which is dealt with in this issue in a separate article. This line will be 750 miles long and the estimated cost is $30,-

000,000 gold or $40,000 per mile. So the Chinese railway program in her dependencies, which the government seems committed to, is as follows:

	Miles.	Estimated cost.	Per mile U. S. Cy.
Kalgan-Suiyuan Line...	230	$11,500,000	$50,000
Sui-yuan-Urga.....	600	15,000,000	25,000
Urga-Kiachta.....	175	4,375,000	25,000
Sui-yuan-Lanchowfu Line.....	600	24,000,000	40,000
Lanchowfu-Ili Line.....	1500	60,000,000	40,000
*Sui-yuan Sair-ussu-Uliassutai Line.....	600	24,000,000	40,000
Uliassutai-Kobdo Line..	300	12,000,000	40,000
‡Barkul-Uliassutai Line.....	400	16,000,000	40,000
Chinchowfu-Tsitsihar-Aigun Line.....	750	30,000,000	40,000
	5155	$196,875,000	.....

*The proposed Central Mongolian line to Uliassutai, and beyond to Kobdo, would undoubtedly branch off the Trans-Mongolia line to Urga, somewhere near Sairussu about 350 miles northwest of Sui-yuan.

‡A connecting road between the Lanchow-Ili and Uliassutai lines would be greatly shortened by a road connecting the latter post with Barkul.

Without the aid of foreign loans and relying on the present state of China's finances, at least 20 years would be occupied in carrying out this extensive program. The key to the entire system is the extension of the Kalgan Road to Sui-yuan and Kweihaucheng. At the best this will take two or three years to complete, and from here the Lanchow and Urga lines will extend. The rate of progress from this point will depend entirely on finances. If the surplus earnings of the Imperial Railways of North China are to be ear-marked solely for these roads, progress will be very slow. Foreign loans are necessary and it appears that despite the unsatisfactory commercial side of the undertakings, such capital can be secured on favorable terms to build these lines.

The *Times* correspondent in a recent letter on the Kalgan Railway, and colonization of Mongolia, says: "No race has greater powers of colonization than the Chinese and nowhere have their powers been displayed more strikingly than in their extension into the pasture lands of Mongolia. Along a front several hundred miles in length the Chinese are moving northwards into the Mongol pasture lands at a rate that has been estimated at four miles per annum. Mongols cannot resist this pacific invasion of a people intellectually their superiors, who bring with them their industrious habits, their farming implements, and their skill in husbandry. Where a few nomad Mongols earned a scanty subsistence with their herds on untilled soil, now thousands of Chinese are living. Nomadic life is disappearing and agricultural life is taking its place. Villages are being built, schools erected, and the whole Chinese Government is seen at its best in encouraging this agricultural expansion. Land is given at merely nominal prices. Every encouragement is given to the husbandman and the results are remarkable, for cultivation causes the soil to retain its warmth so that seasons are modified and climate and rainfall undergo change. The time, indeed, seems not remote when the Gobi and Ordos deserts will be invaded and reclaimed. The Kalgan railway and the construction of the projected extension to Kweihuach'eng will give additional encouragement and assistance to Chinese colonization in Mongolia."

So it is not alone from political considerations that China is moved to push her railways into Mongolia. Equally important to her economic welfare is the opening up of new country for her rapidly multiplying millions. Judging from experience in other parts of the world, and even in Manchuria, it may be taken for granted that the influx of settlers from the over populated districts of the larger provinces, into the newly opened districts of Mongolia, will quickly make any new railway a commercial success, and source of revenue to the Government. What may seem now to be an unprofitable undertaking, in a few years would amply justify the expenditure. Of all countries in the world, China needs room to expand in, and Mongolia, Sinkiang and Tibet must be preserved to her for this purpose, or in another quarter of a century, her millions will demand a domicile in parts of the world now barred to their entrance.

The sudden interest displayed by the Chinese authorities in railways to Jehol, and beyond to the Imperial Hunting Park, is evidently traceable to the desire of British interests to give effect to the clause of the additional Agreement of 1902, which concedes to them the right to build a chord line from Peking to Tungshan.

This reads as follows:

"Art. 5. Under Clause 3 of the Agreement dated October 10th, 1898, it is stipulated that the construction of branch lines or extensions shall be undertaken by the Northern Railways Administration, and the intent of this stipulation is hereby confirmed in order to secure the existing interests of the railways. It is therefore agreed that the construction of any new railway within a distance of eighty miles of any portion of the existing lines, for which concessions have not been signed previous to the date of this Agreement shall be undertaken by the Administrators-General of the Imperial Northern Railways.

Such lines as the following:

A northern line from Peking or Fengtai to the Great Wall;

A chord line from Tungchow to Kuyeh or Tongshan;

A line from Tientsin to Paoting Fu;

shall not, in view of the interests of the Imperial Northern Railways, be allowed to fall into other hands."

A month or so ago Pekin dispatches in the native papers stated that as foreign applications for the contract for construction of a railway from Chinwangtao to Chuyungkuan had been refused by the Waiwupu, the Yuch'uanpu has made up its mind to extend the Kalgan line to Chinwangtao, to be a branch line to the Kalgan-Peking line, and Imperial sanction will shortly be obtained for the project.

This would imply that British influences have been at work to secure the construction of the line in compliance with the agreement, but China has the right to build it herself, and the same rule will apply as with the Kalgan line.

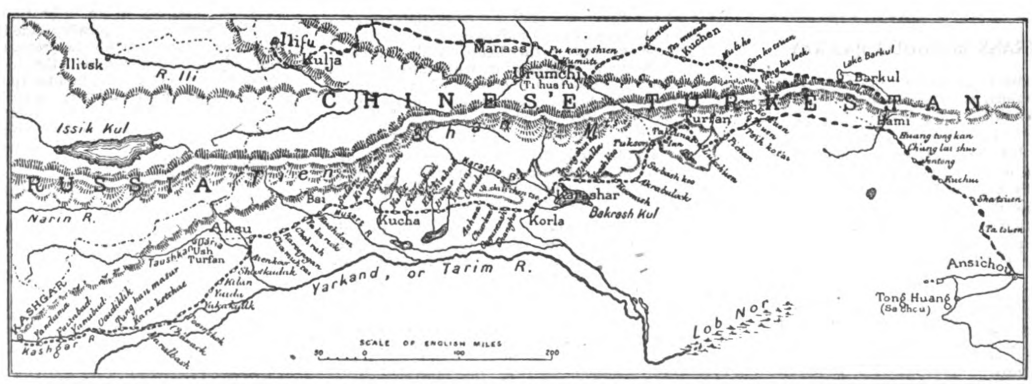
YIN CHING-CHOW BRANCH OF THE PEKIN-KALGAN RAILWAY

In addition to the main extensions to the Kalgan Road, the Board of Communications proposes to construct a branch line from the Hwailai station to Yin Ching-chow, a distance of 40 li or 14 miles. This will facilitate the transport of cereals from that district and prove a profitable enterprise.

JEHOL BRANCH RAILWAY

Another offshoot of the Kalgan Railway has recently received considerable attention from the Board of Communcations. This line will run from Pekin or some point on the Kalgan Railway to (Chengtefu) Jehol, the capital of Inner Mongolia, situated in the centre of an extensive mineral and timber district. The Military Governor of Jehol has strongly urged the construction of this line as a military necessity. A recent news item from Pekin states: that "the construction of a railway from Peking or Kalgan to Jehol has been mooted by the Yuch'uan-pu for some time without any definite conclusion having been arrived at. More recently, however, as a foreign power showed desire for the place, in view of its fertility and richness in minerals, President Hsu Shih-ch'ang has again considered the question. He will consult with H. E. Ting Chieh, late Assistant Military Governor at Jehol, before beginning the construction of the line, which will probably be taken in hand next year."

The distance from Pekin to Jehol is about 100 miles. At the same time the Military Lieutenant Governor of Jehol wired to the Board of Agriculture, Works and Commerce and the Board of Communications to consult about a 600 li light railway to be built between the forest of the Imperial Hunting Reserves and the town so as to give facilities for the sale of timber, a fund to be provided by the Viceroy of Chihli.



MAP OF PROVINCE OF SINKIANG OR CHINESE TURKESTAN SHOWING CARAVAN ROUTES AND POSSIBLE RAILWAY LINES

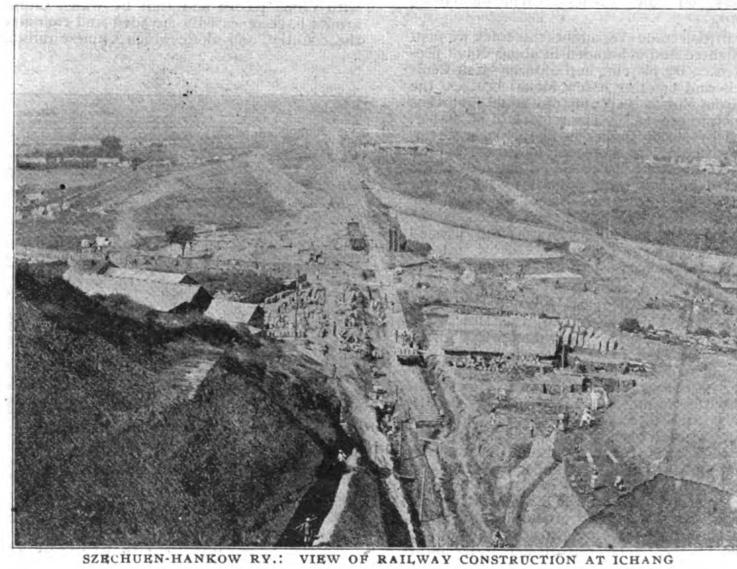
SZECHUEN-TIBET RAILWAY PROJECT

ON THE BORDERS OF TIBET

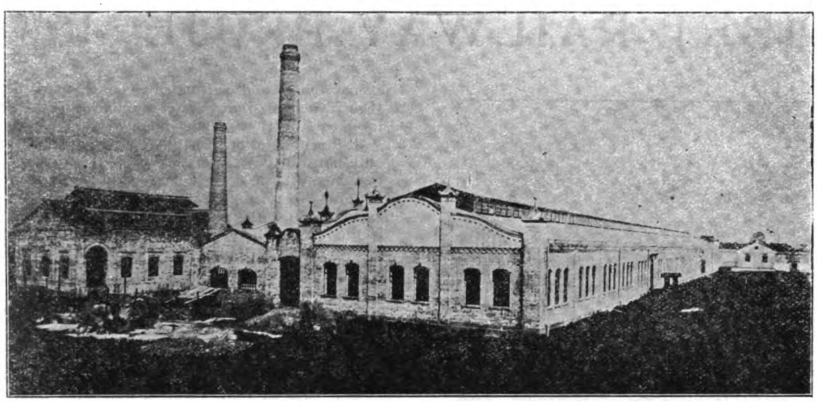
(*China Inland Mission.*)

Shanghai, March 1st, 1910.—The advance of the Chinese Army into Tibet, and the hurried flight of the Dailai Lama from Lhasa to a safe refuge in India, brings into prominence the projected railway from Chengtefu to Tibet. The Chinese have been operating for a long time to subdue the unruly Lamas and bring the country under Chinese rule. Each successive Viceroy of Szechuen has had his time fully occupied in warlike operations against the Independent Lolo tribes and the truculent Tibetan lamas. Instead of a sinecure, the post at Chengtu has called for considerable activity, and the maintenance of an army and cost of operations has consumed a large share of the provincial revenues. In fact the subjugation of the independent tribes of the Chia-Kung and the Tibetan frontier campaign has been a continual drain on the revenues of Szechuen, and advantage has been often taken of this fact by the Viceroys to absolve them from making the regular remittances to Peking. Under the last Viceroy, H. E. Hsi-Liang, now filling the post at Mukden, the outline of a campaign to regain complete ascendency over the border lands and Tibet was formulated. Coincident with the recruiting and organization of a modern military force, the plans for a large arsenal were drawn up. Taotai Key Tsu-yi, a graduated Civil and Mechanical Engineer from the Troy Polytechnic Institute, was appointed by Viceroy Hsi to visit Europe and select the plant. The order was placed with the well known firm of Schuchardt & Schutte. Machinery for the manufacture of rifles and cartridges, machine and mountain guns, and a complete powder factory were ordered, and the plant has only recently been turned over by the contractors and accepted by Viceroy Chao.

While Hsi-Liang was Viceroy at Chengtufu, he had under him as Taotai of the Mantze Marches, located at Yachowfu, Chao-Ehr-feng, a Chinese Bannerman. Yachow is the last Chinese town of importance in the province of Szechuen on the high road to Tibet, and the then administrative outpost of Chinese authority. Chao identified himself with the development of the province, and was appointed director-general of the native company formed for the construction of the Szechuen-Hupeh Railway, and when Hsi-Liang was ordered to Yunnan, the ordinary operation of Chinese official procedure was set aside, and the Taotai of Yachow-fu was appointed Acting Viceroy over the heads of the Provincial Treasurer and Judge. His brother Chao Ehr-hsun, the last incumbent of the post of Tartar General of Mukden, was appointed Viceroy of Szechuen, and at the same time Chao-Ehr-feng was appointed Frontier Commissioner and Resident in Tibet, with the rank of President of a Board. The latter's knowledge of the country and his long tenure of office on the Tibetan borderland well qualified him for the new post, and it is a striking example of China's progress, that the authorities in Peking should select and appoint a really suitable and competent official for this arduous work. Viceroy Chao brought with him many progressive ideas, and proceeded to carry out in Szechuen what he had initiated in Manchuria. As a result many new enterprises have been floated under native control, and an impetus given to the improvement of transportation. The Szechuen-Hankow Railway connecting Chengtofu with Ichang has been started, without the aid of foreign capital, and the Szechuen gentry have gone beyond the limits of their province and contracted to construct with their own funds that part of the line in Hupeh province from the Szechuen boundary to Ichang, a distance of approximately 75 miles. It is only natural that Chao Ehr-feng, in his operations against the outer tribes and his endeavors to mobilize a frontier force and prepare the expedition for the subjugation of the Lamas in the interior of Tibet, would turn his thoughts towards a railway from Chengtu over the mountain ranges to Bat'ang. And when it is remembered that his expedition has been delayed in starting an active forward movement for over a year and he received many urgent commands from Peking to make haste with his task, and subjected to much adverse criticism for his apparent want of courage, it can be readily understood that he has defended his actions on the score of transportation difficulties, and urgently recommended the construction of a railway from Chengtu to Tibet. In this he received the indorsement of his brother, Viceroy Chao. And so the Peking authorities without more ado authorized the Viceroy to go ahead and build the line. The distance from Chengtu, the base of operations, to the frontier posts at Batang where the military force was being mobilized, is only about 350 miles, and from there on to Lhasa, another stretch of 500 miles, and the country is undoubtedly the best in the world for the play of the highest engineering skill. But according to the naive Chinese reports, in pursuance of instructions received from Peking to build the line from Szechuen right through to Lhasa, Viceroy Chao and his brother, Resident Chao, took counsel together, and found that a preliminary estimate for the scheme was only Taels 30,000,000, and on this account it could not be carried out. This is only a cost of about $35,000 gold per mile, for a few miles of tunnels, a score or so of Zambesi Bridges and other minor engineering difficulties. However, this expenditre was beyond the capacity of Szechuen and it was proposed to go ahead slowly and build the line as far as Tachienlu at first, and then extend it slowly by stages from the profits of this section. As an after thought the native report concludes with the remark that "engineers and surveyors have been sent out to survey the line before beginning operations." The matter was, however, a serious one for Their Excellencies Chao, and also important to the best interests of the Imperial Government, and has therefore, been rescued



SZECHUEN-HANKOW RY.: VIEW OF RAILWAY CONSTRUCTION AT ICHANG



THE NEW ARSENAL AT CHENGTUFU

from a ridiculous position, and elevated to one of great moment to the state. Viceroy Chao advised the Peking officials that Taels 30,000,000 could not be raised in Szechuen and suggested that the line be built by sections, and the Yu-chuanpu was thereupon ordered to appoint surveyors to map out the route. The surveyors are now at work beyond Chengtufu. But Resident Chao, having charge of the military operations, and with a reputation at stake, and the national honor resting on him, could brook no delay in the matter, and proposed that a joint American and German Loan be contracted to hasten the work. As the projected road may not be self-supporting, the Imperial Government has decided to await the result of proper surveys and investigations, before discussing a foreign loan. And so the matter rests for the present. Resident Chao and his modern drilled troops have taken the war path, filled the Lamas with the fear of Confucius, and driven the reincarnated Buddha to a safe asylum under the protection of the Viceroy of India. With the country of the Lamas under subjection, and the authority of the Huangti recognized throughout the land, Resident Chao's solicitude for a railway to Lhasa may relax. But the scheme must sooner or later be carried into execution, if China is to retain control of Tibet. Fifty million taels or $30,000,000 gold is a small sum to pay for the retention of Tibet, and it is safe to assume that within a few years active work will be in progress on the Chengtu-Tachienlu-Batang sections.

"If British trade ever adopts this track we shall be delighted and astounded in about equal proportions. By piercing half a dozen Mont Cenis tunnels and erecting a few Menai bridges, the road from Burma to Yunnanfu could doubtless be much improved." The remark of M. Baber, quoted by Major Davies in his book on "Yunnan" with only a change of localities, applies with equal force to the proposed line into Tibet.

The main road from China into Tibet, over which passes the traffic, and along which the Chinese military posts are established is the great highway leaving Chengtu, and passing through Yachowfu, Tachienlu, Hokow, Litang, Batang, and thence westward over the mountain ranges to Tibet.

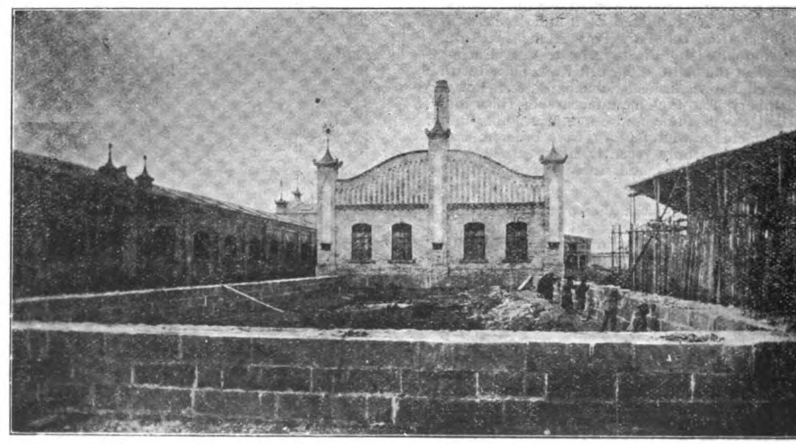
Starting from Chengtufu with an elevation of 1,700 ft, the road follows the Min River valley down to Kia-ting fu, a distance of about 80 miles, and then up the valley of the Ya River to Yachowfu distant 60 miles. There is another shorter route over the foothills from Chengtu to Yachow of about 100 miles. At Yachowfu the real difficulties of the way commence. Starting with an elevation of 2,500 at Yachowfu the road ascends the valley of a swift mountain stream, and for the first 35 miles rises to 4,000 ft., and in the next 15 miles it crosses the Siang Ling range at an elevation of 16,100 feet in seven miles to the valley of the Tatang River at Lu ting Chao. Here the torrential river is crossed by the famous suspension bridge built over 50 years ago, and the road ascends the valley along precipitous cliffs to Wa Szekow, and ascends the ravine at this place to Ta Chien lu, rising 3,000 ft. in 12 miles.

From Tachienlu at an elevation of 8,400 feet the road makes a steep ascent of 7,000 feet over the Gi-la pass, in a distance of about 15 miles, and from here to the Hokow ferry over the Ya lung River there is a comparatively easy stretch with only one low pass. From Hokow westward to Litang there is a succession of high passes. And after leaving Hokow the road again ascends 6,000 ft. in 17 miles, and then follows the slopes of the range, about 80 miles west to Batang. The mountains on either side rise to an elevation of 16,000 to 20,000 ft. After leaving Batang there is also a succession of high ranges and deep valleys to be negotiated before the road strikes fairly even country on the slope downward towards Lhasa.

If this road is ever built, the estimate of Major Davies for the Yunnan Line of £15,000 to £20,000 per mile of meter gauge road will come nearer the mark than the reported Chinese preliminary estimate of £7,000. The French meter gauge Yunnan road cost over £12,000 per mile, and with the increased difficulties of the Tibetan road, the cost will not fall short of Major Davies' figures.

Mr. Archibald Little in his work on the Far East says:

"The easiest road by which to enter Tibet from the east is that over which the traffic with China passes and that by which Chinese armies have repeatedly invaded and conquered the country, and along which Chinese military posts are established to-day; that is, the great road from Chengtu, the capital of the province of Szechuen, which leads through Tarchendo, Litang and Batang to Lhasa; this road, after crossing the Min river at Kiating, leads up the valley of the Ya to the Chinese prefectural city of Yachow. In the beautiful Yachow valley is grown the shrub which provides the Tibetans with one of their chief necessaries of life—tea—which is here pressed into bricks and carried by toiling coolies over three mountain passes, up to 10,000 feet in height, to Tarchendo. Yachow lies at the foot of the Siang-ling, an outwork of the high Tibetan barrier, over which leads the first of these three passes. The Siang-ling or Elephant range (so named in memory of Pu-hien, who carried the sacred books of Buddha from India to China over this pass on the back of an elephant) forms the first of the mountain barriers that separate China from Tibet, and which, up to the time of Kienlung's conquests in the eighteenth century, formed the political barrier as well. Crossing two more passes in the barrier ranges, the road traverses the swift-flowing Tatung river by the famous suspension bridge of Lu-ting Chiao (Kiaking, 1796-1821), built in Taokwang's reign (1821-51), and enters the Ta-hsueh-shan, the Snow range; the great girdling rampart of the Tibetan table-land, by the ravine of Wa-sze-kou (tiled roof monastery), down which flows the impetuous river of Tarchendo, which here discharges into the Tatung after falling 3,000 feet in a distance of twenty miles. The building of the bridge at Lu-ting greatly facilitated the intercourse between China and Tibet, the Tatung river being otherwise impassable in the rainy season, which prevails from May to October and is here very pronounced, while in winter, when the rivers are ferryable, the passes beyond are closed by snow. The rain-clouds from the China Sea are driven by the south-west monsoon against the flanks of the snow range that lines the right bank of the Tatung, and, rising up them, are there relieved of their moisture, leaving little or nothing for the thirsty table-land beyond. The heavy precipitation of this region, coupled with the fact that, from Lu-ting Chiao to its mouth in the Min at Kiating, the Tatung river, here a stream 100 yards wide and six to ten feet deep, falls 3,000 feet in about 100 miles, sufficiently accounts for there being neither ford nor ferry across it from below the mouth of its copious tributary the Tarchendo at Wa-sze-kou until it quits the Tibetan border fifty miles lower down. Here, at a place called Kinho-kou, it unites with the Kin river, and, changing its course from south to east, forms the northern frontier of the independent Lolo country, that extends hence to the banks of the Kinsha river in the south. The "Snow Range" is practically, by way of many intervening folds to the north of Assam and the Burmese "Kachin" country, a north-eastern extension



ONE OF THE WINGS OF THE NEW ARSENAL AT CHENGTUFU

of the Himalayas curving round north of Burma and then trending north-east and so forming the western and northern barrier of the Szechuen lowlands up to the borders of Shensi. This glacier-bearing range, where it runs north, with the foot of its precipitous eastern slope washed in the swift-flowing Tatung river, averages some 20,000 feet in height; 15,000 feet being about the level of the snow-line in this latitude, and Gill gives 22,000 feet as the height of the peaks of the "Nine-nails range," which shuts off the Chengtu plateau on its north-western side from the upper valley of the Min and the Tibetan table-land north of Sungpan. Shortly after crossing the Lu-ting bridge, the road ascends the Wa-sze-kou ravine through the narrow cleft of the Tarchendo ravine to the town of that name, situated 8,400 feet above the sea. Tarchendo is the great frontier mart of Tibetan trade with China, is a busy populous place, a walled city, and the seat of the native "Wang," or prince (called Tu-sze), who, under the surveillance of a Chinese Taotai, rules the Tibetan population of the town and district. Here the Chinese porters deposit their heavy loads, which are then repacked on to the backs of the Tibetan yak, and so carried across the Thamo and Gila passes to Batang and Lhasa. A large barter trade is carried on in skins, musk, wool, and gold from Tibet, and in tea, cotton-cloth, and "notions" from China, many of the most important Szechuen mercantile firms possessing branch hongs in Tarchendo. A few Manchester goods also find their way to and are on sale in the Chinese shops, but the poor Tibetan is fully clad, winter and summer, in a sheepskin robe (pushtu), yak-skin boots, and a fur cap, and has little money and still less inclination for the luxury of clean linen (literally, cotton), such as his more civilized Chinese neighbour delights in; what money he does manage to accumulate is invested in jewellery for the women, many of whom are well groomed and smartly dressed, and to whose hands all business is entrusted. The city of Tarchendo is situated a the junction of two narrow valleys hedged in by steep mountains running up into the snow-line; westward the road leaves the ravine, and leads by an easy ascent to the comparatively arid table-land 4,000 feet above the town. These valleys are well watered by the two torrential streams, the Tar and Chen, which unite above the town, and flow through it. The opening in the mountains has left space for about one hundred acres of level ground outside the city, carefully tilled by Chinese settlers and producing good crops of maize and vegetables. The surrounding mountains are covered with impenetrable scrub, and are reported by the Chinese to be rich in minerals, formerly worked in petty painstaking Chinese fashion; but all mines are now closed by order of the officials, partly from fear that prospectors from the West might otherwise discover their value and claim to exploit them."

THE MARCHES OF THE MANTZE*

TAOTAI KEY TSU YI,

EDUCATED IN AMERICA, 1883, AS CIVIL AND MECHANICAL ENGINEER, PURCHASED THE MACHINERY AND INSTALLED THE STEEL PLANT IN KWEICHOW PROVINCE, AND ACTED AS ITS MANAGER FOR A NUMBER OF YEARS, ALSO SELECTED AND PURCHASED THE PLANT FOR THE CHENGTU ARSENAL, NOW IN CHARGE OF THE MINT AND ELECTRIC LIGHT WORKS AT MUKDEN

One of the most authoritative and interesting descriptions of the Tibetan country, between Tatsienlu and Batang, is to be found in the book, entitled "The Marches of the Mantze," written by Mr. J. H. Edgar of the China Inland Mission, stationed in this district. In view of the great interest attached to this region at present, owing to the sudden activity of the Chinese troops, Mr. Edgar's book should be widely read as his narrative throws considerable light on the situation. With permission of the China Inland Mission, we reproduce the following extracts:

"'The Marches of the Mantze' is a term which may fittingly be applied to that large tract of country in which Tatsienlu, Batang, and Siangchung are situated to the west of Szechuen. From east to west averaging about 500 miles, and from north to south somewhat more, it consists on the whole of high, treeless plateaux from 12,000 to 14,000 feet above sea-level, surrounded by high ranges from 17,000 to 20,000 feet.

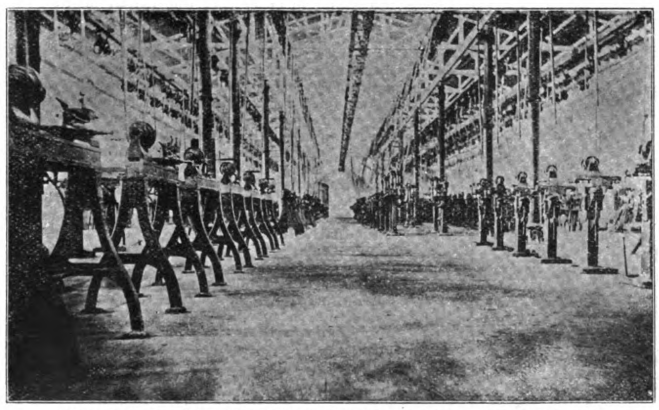
"The people inhabiting the Marches are of Tibetan descent, and without exception speak the language of this people. Here also are noticed some religious instincts, the dislike of foreign rule, the nomadic and predatory habits, the tribal form of government, with polyandry and suggestions of a former matriarchy, a disregard of cleanliness, a love of ornaments, and peculiar diet which characterises the whole Tibetan race.

"This wild land has always resisted Chinese pretensions. Expeditions have devastated it again and again; various forms of government have been employed more or less favourable to Peking; and schemes to colonise it have proved disastrous. It is a matter of history that it has insulted and killed China's high officials; those paltry regions have arrogantly defied China for years; and native chiefs, believed to be loyal agents, have, in the evil day, proved traitorous. But many think what has happened in the past will be an index to the future, and that the wild Marches will continue to exasperate and perplex China. To this day, be it noted, the regions of Chantui, Sanai, Linkasi, and other places are either directly under Lhassa, or remain, like Derge, practically independent of either that centre or Peking.

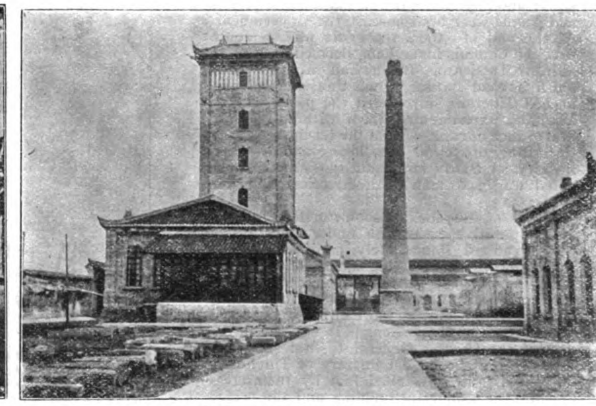
"The roads through the Marches and the means for transport are peculiar. The pedestrian, so common on the plain, and the strings of heavily burdened coolies or stolid carriers, are unknown west of Tatsienlu, and the traveller and his baggage are at the mercy of the ungroomed and often unreliable animals of the Tibetans. A look at the map of the Marches will explain the change. The official road to Lhassa passes along the norther border of the Marches, the rivers of which are very numerous. The rivers flowing south and the road going west, the traveller is not only near the watershed of a great river system, but is continually dipping into the valleys of the above rivers and crossing the passes of the mountains which divide them. The road through the Marches is only once—and that in the valley of the Yalong—below 12,500 feet, while twelve passes, not one of which is under 14,500 feet, must be crossed!

"Few who have not visited the Marches will understand what a prodigious task the administration of Tibet really is, and it will no doubt surprise many to know that the multitudinous officials and suites, changing once in three years for reasons both humane and imperial, means a literal stream of ingoing and outgoing officials, soldiers, couriers, and tribute bearers connected

*_The Marches of the Mantze_, by J. H. Edgar, Missionary in the Tibetan Border, with a preface by Cecil Polhill. Published by the China Inland Mission. Price .75 Mex.



THE NEW ARSENAL AT CHENGTUFU: SMALL ARMS MACHINE ROOM



POWDER FACTORY AT CHENGTUFU

with the Tibetan administration. And on the whole China has made arrangements to overcome the difficulties of travel in one of the highest thoroughfares in the world, in principle eminently satisfactory, and by no means as unfair as generally supposed.

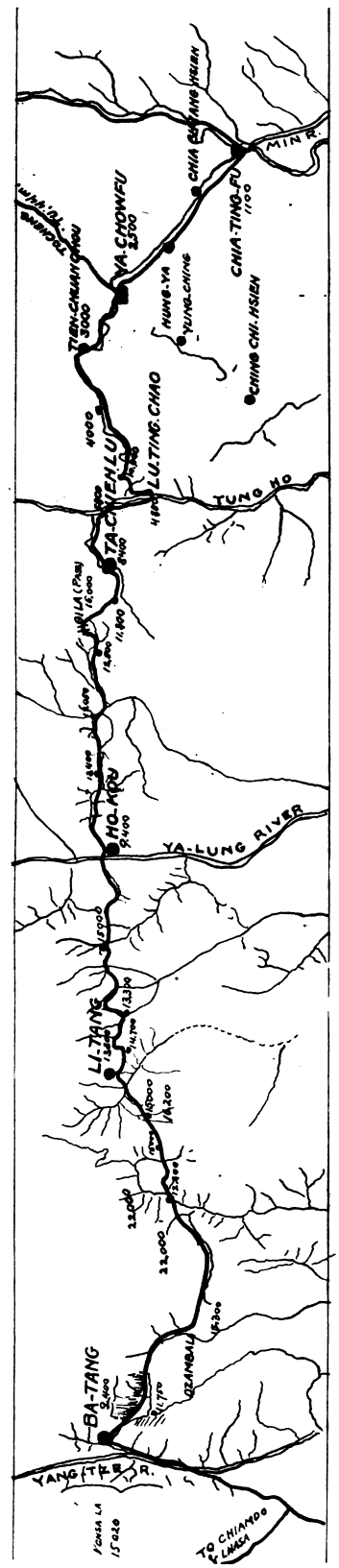
"About three years ago a serious rebellion agitated the whole region west of Tatsienlu, and as it was to mark the beginning of a new era in the Marches, it is worth examination in some detail. It is relatively correct to say that the rebellion had been simmering for many years. The abuse of the socage system, arrogance of the Lamas, avarice of the native chiefs, and the cruelty of the Chinese had caused widespread dissatisfaction among the people in districts abutting on the main roads.

"But more serious forces were at work. When the writer arrived at Tatsienlu in 1902, Russian influence was paramount at Lhassa. Dorjieff, an educated Russian Buriat, had so gained the ear of the Dalai Lama that a secret treaty had been signed favourable to Russia, and preparations were being made by Tibet to cast off the yoke of China. Both England and China were alarmed, and the former demanded a settlement of outstanding questions affecting her Indian border. But the Tibetans treated the demands with such contempt that an expedition was despatched to demand a settlement at Lhassa if necessary. After weary months of fruitless waiting, and often sharp fighting, the capital of Buddhism was entered only to find that the Dalai Lama and Dorjieff had fled towards Urga. An agreement, however, more or less satisfactory, was signed by some authority in Tibet, and Colonel Younghusband returned to India.

"In 1903 the powerful Lamasery at Litang openly defied China and for some time it was uncertain whether the local chiefs and the Chantui confederacy would join with them. However, owing to the prompt and courageous action of Sub-Prefect Liu at Tatsienlu, the clique suffered a severe blow by an attack on the Lamasery in which the Lamas were defeated and the Abbot with some of his relatives summarily beheaded. About the same time, also according to a persistent rumour, Batang, Litang, and Chantui had a secret agreement in which throwing off China's yoke and influence was aimed at. In 1904, owing to a grant of mining rights in the sub-chieftaincy of Kata, the opportunity for action seemed imminent, but Chantui retired from the union and the forces of China were allowed to march on Tailing and demolish the famous Lamasery unopposed.

"But at last a mistaken policy at Peking and the lack of tact displayed by a leading official were the sparks which exploded the magazines of Tibetan discontent. Feg, a Manchurian, received appointment as 'Deputy Imperial Commissioner of Tibetan Affairs,' with instructions to reside partly at Batang and partly in Chamdo. This arrangement was very unpopular, inasmuch as it threatened to interfere with the freedom of the native chiefs. But when Feng, shortly after his arrival at Batang, included in his policy a scheme for reducing the power and population of the Lamaseries, priests and people were both against the Government. At the end of 1904 the crisis was so acute that the Commissioner Feng deemed it safer to retire to Tatsienlu. But he had only proceeded ten li beyond Batang, when thousands of ambushed Tibetans surrounded the party of fifty men and exterminated them without distinction of race or rank. Then the rebels, returning to Batang, drove out the Chinese and occupied the city for nearly four months. Among those killed was a Roman Catholic priest and five converts.

"News of the rebellion soon reached Chengtu and a punitive expedition under General Ma was organized immediately, and arriving at Batang on the 24th of the sixth month, recaptured the city, executed the two chiefs, and set an expedition to exterminate the inhabitants of Chihtsuen, who were more directly concerned in the death of H. E. Feng. It was the intention of the Chinese General to first sack and then destroy the huge Lamasery of Tinglinsze, but the Lamas forestalled him by themselves burning the wonderful building and the bridge over the Chihtsuen River, and fleeing with the temple treasures to the inaccessible mountains of Sanai. The abbot, however, was laterly given up by the Chihtsuen natives and executed as a rebel of the Chinese Empire. At Siangcheng operations dragged on until the 4th intercalary month of the 32nd year of Kwang Hsu (1906), and it was not until the capture of Yenching in the 12th month of the same year that the war was brought to a close.



SKETCH MAP OF THE GREAT TIBETAN ROAD ACROSS THE MANTZE MARCHES FROM YA-CHOWFU TO BA-TANG

"The outcome of the rebellion was not only startling because the power of Lamaism was broken and the old form of native government discarded, but also on account of the fact that China is full of plans for the reorganisation of the conquered regions. Not only are the strategic centres garrisoned with troops and officials appointed, but the conditions of travel are improved, a telegraph terminates at Batang, and every inducement is offered to Chinese to cultivate the waste lands and work the mineral deposits of the country

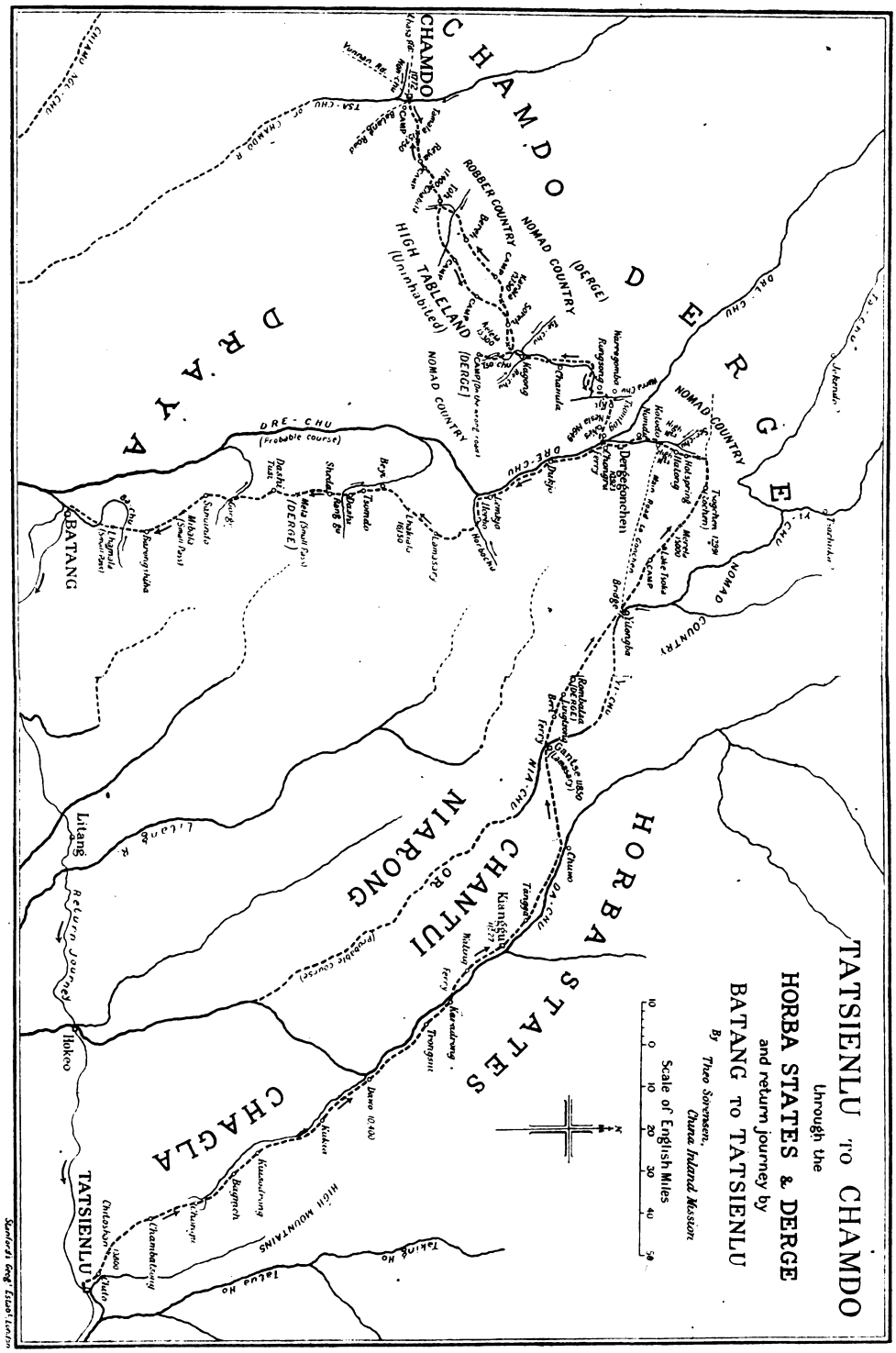
"By comparing conditions now obtaining with those observed by the writer in 1903 an idea of H. E. Chao's influence in the Marches may be gathered. The condition of Litang, for instance, in those days was by no means reassuring. The Lamas, although lately punished by the Chinese forces, were truculent and unfriendly, and the native chiefs endured the Chinese because of their inability to oust them. Brigands thronged the mountains, and the great regions south of Litang were closed to Chinese and foreigners alike; and in the city, among officials, traders and soldiers, the fear of the Lamas had taken the place of the fear of God. But revisiting the region again after three years the change is really remarkable. Then all was chaos and uncertainty: now order and confidence in Chinese rule is manifest everywhere. This is largely due to the humiliation of the Lamas. Although the Litang colony has not suffered, the haughty and defiant confederacies at Batang and Siangcheng have been broken up, the temples sacked and destroyed, and the Lamas killed or disbanded. And there is a feeling at Litang that China would make no exception in this region if circumstances demanded it. Again in Litang and Batang the native rulers have come to grief, the latter two suffering the death penalty for high treason, and the former being deposed forever. One is now a fugitive in Tibet, and one died by his own hand while on his way to Chengtu.

"There is no doubt that the people recognize that the strong arm of China has done all this, and rebellion is no part of the Tibetan's programme. But in case they might forget, China has placed a camp of one thousand men in the city under a Tao-tai, who drills them daily according to foreign methods. Moreover, this body of men attends to many details which now make Litang both pleasant and safe to live in. Bodies of men, for instance, patrol the streets demanding both orderly and decorous behaviours. They are also concerned with a policy for the extirpation of brigands, and in this respect alone have done an important work. Whole regions formerly infested by these picturesque but inconvenient gentry are now quite safe. On the awful Hwangtukang, 16,000 feet above the sea-level, companies of soldiers from the Litang camp spent the winter in order that the district might be free from the road agents.

"Now the outcome of all this is a confidence in the Government, which is highly beneficial to the Chinese and Tibetans. Business is increasing rapidly; trees are being planted in the waste lands; telegraph communication connects the city with Peking; and the Roman Catholics have bought buildings for missionary purposes. All this suggests that Litang has entered a new era—an era with orderly government, uninfluenced by Lamaism

"It was much the same at Batang. In 1903 China was ignored or insulted by Lamas and Tusis (native chiefs) alike. Now the Lamasery is burnt and the order of the native chiefs extinguished for ever. Moreover, China aims at ruling the turbulent people directly. The appointment of city elders, the erection of schools for the people, and attempts at colonisation indicate that China will endeavour for many years to assert her authority and inculcate her principles.

"In dealing with the Mantze Marches, three places must be supremely important, and a fourth indirectly so, viz., Tatsienlu, Litang, Batang, and Siangcheng. Tatsienlu is at the extreme east of the Marches, and is a political and commercial centre of primary importance.

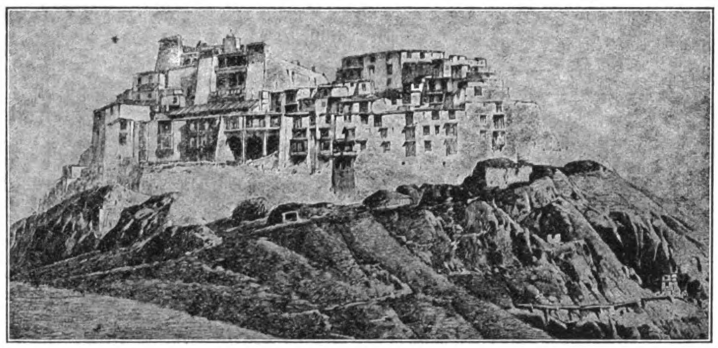


(From China Millions.)

THE GREAT TIBETAN HIGHWAY SHOWING NORTH BRANCH OF THE ROAD FROM TATSIENLU TO CHAMDO, TRAVELLED BY MR. SORENSON OF THE INLAND CHINA MISSION, THE SCENE OF THE MILITARY OPERATIONS OF H. E. CHAO ERH FENG

It is the *Ultima Thule* of China and Tibet, where a thriving trade is done in the wares of both countries. Moreover, it is the residence of the chief of Chagla, a quasi-independent kinglet with jurisdiction in other states more distant from China.

"Tatsienlu, apart from being the centre of the Chagla region which borders on Lengpien, Shenpien, Tsali, Meilo, Litang, Chantui, Kata, Badi, Bawang, Meokong, Muping, and Yutong, is also the starting point of two main roads to Lhassa, and one also to the regions of Ta and Siaokin.



VIEW OF ONE OF THE LAMASARIES

"Hokow is situated at the west end of Chagla and controls a very important ferry over the Yalong. All the interior officials and large caravans of merchants and travellers must perforce pass through and remain some time in its vicinity. For instance, once in three years two Ambans go into Lhassa with enormous trains, and once in three years two come out laden with the wares of Tibet. And during the same period the various officials, ordinary and extraordinary, of all grades proceed to their posts and retire when their term is completed.

"Hokow commands four roads: one east through Chagla to Tatsienlu; another west to Litang; a third north to Chantui; and one south to Meilo. It has a population of about 300 souls; 200 on the Chagla side, and 100 under Litang. The valley east (to the foot of Kazhila) will have a population of 100 families, including the senior headman of Chagla.

"Batang is a village at the extreme west of the Mantze Marches, with a population of 400 families. West of Litang, 520 li, it is the centre of an important district, partly administered from Peking, and partly from Lhassa. In my diary of 1903 the city is thus described:

"Until lately the native population of Batang was controlled by a Tibetan chief and his deputy. At the conclusion of the late war they were deemed guilty of high treason and executed, their families being taken captive to Chengtu. The head chief, whose ancestors were from Yunnan, a Chinese named Lo, was a second official of the Chinese Empire, and a third-class native ruler. His daughter, a pretty maiden of sixteen, is in captivity in the Commissionary's residence. She seems quite happy, and it is rumoured that the official has proposed making her his daughter-in-law, but the mother, now a captive in Chengtu, declines the honour. At present the government of Batang is directly under a fifth-class Chinese official, who must perforce hear and decide cases through an interpreter, a method which practically leaves the community in the hands of dissolute and untrustworthy half-castes.

"Litang is a Chinese and Tibetan village nestling in the corner of an enormous plain, and is the capital of a nomadic district of the same name. Situated at an altitude of nearly 14,000 feet (B. P. 199.4°; Temp. 60° F.), it may perhaps claim to being the highest city in the world. The Guide Book of Tibet gives the following information regarding this city:—'Litang is 650 li from Tatsienlu and 520 from Batang.'

"In the town and environs the following figures, though based on official information, are given tentatively:

Lamas, servants and students in Lamasery	5,000
Tibetans in immediate vicinity	2,000
Chinese, Tibetan concubines of same, and children	1,000
Nomads on plain and hills around	1,000
Soldiers, servants and concubines of same	1,000
Total population based on official information	10,000

"Litang, notwithstanding its dreary plain, rigorous climate, filthy street, and villainous Lamasery, must always be of great importance to China. It is in the first place on the official road to Lhassa, and also the natural centre of some 5000 Tibetan families in the south. Then the nomads to the north, probably 3200 families, find it their only centre, and traders from Chantui, Sanai, and even Derge visit it in large numbers. The population of the district I give with some hesitation as follows:—

Nomads, Maoyang, Chuehteng, Bonyag, etc., Chongsi	13,000
Local population—Chinese Tibetans, half-castes, etc	10,000
Siangcheng, Kongkalin, Taopa, etc	16,000
Shomba, Molashih, Tsosang	10,000
Chinese officials, soldiers, etc., in above regions	1,000
Total population of region formerly under Litang, Tusze or Chiefs	50,000

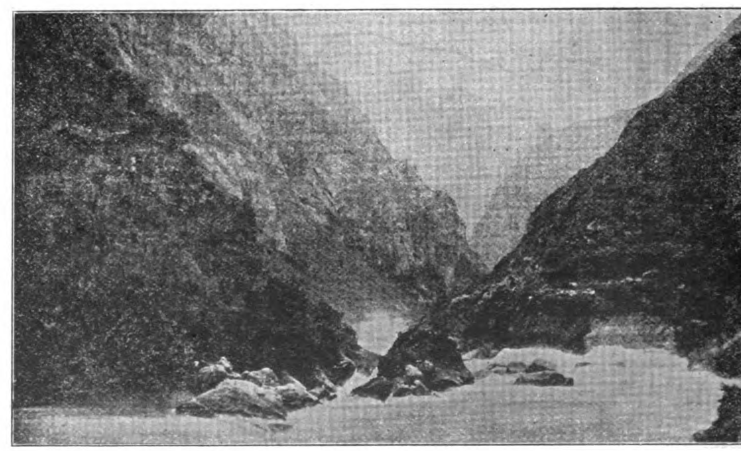
"Litang is likely to remain an important military centre. It is about the middle of the Marches. In the south are the insolent tribesmen of Taopa and Siangcheng; to the south-east the semi-independent region of Meilo, with large and turbulent Lamaseries. Hordes of the independent Chantui, and perhaps also the incorrigible Sanai, threaten on the north, and the local opulent Lamasery will not be slow to take advantage of inefficient administration. From the above it will be seen that the Chinese official, trader, or colonist is only safe as long as China has an army on the spot strong enough to intimidate her relentless and dissatisfied 'barbarians.'

"The above will all have a direct bearing on the commercial status of Litang. Food, clothing, wares, and luxuries for officials, soldiers and Tibetans must all be brought in from Tatsienlu and retailed here, while a large export trade in gold, drugs, hides, and Tibetan commodities may be expected.

"Although for many years defied by the southern tribes, and intimidated by the Lamas locally, it was not until the murder of the Imperial Commissioner Feng at Batang that they showed open signs of insubordination by delaying the transport service. When the generals of China arrived and demanded Ulag, the chiefs were 'not at home' for a month; then sufficient animals would not arrive, and finally the ancient Courier service was not only arbitrarily abolished by their orders, but trains of ammunition, provisions, and accoutrements were left to spoil on the roadside. Finally, important despatches were destroyed, and companies of natives and arms were sent to the assistance of the Taopa and Siangcheng rebels.

"When the Chinese returned victorious, the head chief had fled into Tibet with his family and belongings, and threats and promises of rewards alike failed to unearth him. His colleague remaining at his post in Litang was taken prisoner, with the understanding that his case should be tried at Chengtu; but the triumphal procession had not gone far when it was known that the scion of royalty had taken poison, and before Hochuka was reached he had nothing to fear from earthly justice or injustice. Shortly afterwards, a proclamation by H. E. Chao, Warden of the Marches, abolished the ancient order of chiefs existing in Litang for ever. The northern sub-chiefs remained unchanged; the immediate region of Litang, laymen and priests came under the Commissary of Litang; and Siangcheng and Taopa are yet under martial law. Just what the future form of government will be, is not easy to say; but we may be almost certain that the Lamas, humbled and warned by the fate of Batang and Sampeiling, will not by influence or action complicate the Chinese programme.

"The Tibetans in the regions of Bali are mortally afraid of these wild tribesmen just opposite, and call them robbers without qualification. They dare not offend them on account of reprisals, and it is rumoured that the chief receives 400 taels annually from China on condition that his people do not pillage Chinese subjects. Those of the Sanai which I have seen are wild, independent fellows, wearing peculiarly shaped white felt hats with high crowns and broad brims. It is said they live far up the mountains, but just opposite Shuimaokow there is a settlement where the Sanai live during the season necessary for the cul-



(China Inland Mission.)

THE TACHIENLU RIVER IN GORGE BELOW THE TOWN

tivation of the fields on the river-bank. When winter comes they disappear in the unknown hills to the west. This alone, if true, would give the idea of a haphazard and predatory people.

"Sanai was once under China, but for some reason Tibet claimed it and the former made no effort to regain it. During H. E. Chao's operations in the Marches, however, the subjugation of Sanai was part of China's policy. A party of men went north-west from Litang to the Sanai border and invited the chiefs to parley. As the discussion was going on a Gatling gun was brought out, and its power tested on a rock in the presence of all. The effect was so vigorous that the chiefs tendered their allegiance immediately! 'Sanai,' says the Guide Book, 'is east of Asutang and north of Chiangka. It is known as the district of the Bafan. The people are wild and fierce, and live by robbing travellers.'

"Chupalong is ninety li south of Batang, with a population of 30 families. A small official resides here whose duty it is to control the famous ferry over the Kinsha. The population, although slightly modified by Chinese colonists, petty officials, boatmen, and others, is quite Tibetan in customs and language. We left Chupalong at 3 p. m. and crossed the Kinsha by an auxiliary ferry at a lonely place ten li below the village.

"Kongla is a settlement of about 15 families, near where the Tibetan road leaves the Kinsha for a more westerly course. With the villages of the Kongtzeting, and others on the mountain above, it would form a centre for about 70 families. On the left bank of the Kinsha is a road to Rongmi or Tsongtsah, and an unsubdued region farther south bordering on Siangcheng. The Chinese, probably actuated by ignorance and politeness, give the population of the former as 4000 families, and the latter as 1000 families."

(*China Inland Mission*)

ON THE ROAD TO TIBET: THE TOWN OF TACHIENLU

EIGHTY DAYS TRAVEL IN EASTERN TIBET

A Journey Through all the Horba States, through Part of Derge, into Chamdo, and the return journey by Batang to Tatsienlu.

By Theo. Sorenson.*

In company with the Chinese evangelist, a Tibetan colporteur, and a half caste servant, we left Tatsienlu on the 31st of May with a passport entitling us to travel in the whole of Derge. We did not, however, put much confidence in this Chinese passport, as in previous years similar passports had been given me, but not one of them ever brought me further than Kianggu, where the official had private instructions from Tatsienlu to prohibit me going beyond. This time we were better prepared. Having our own horses and provisions to last us several months, we felt that we could do without official help, and, in fact, preferred to travel without Ula.† At Bagmeh we visited a small temple on the hill in which a hermit was locked up for life. We tried to enter the place, knocked at the door and called him, but all in vain, he was not to be moved by influences from the outer world. We noticed there were two doors leading into his cell, one locked from the outside and evidently in charge of those who bring him his food; the other locked from the inside, for his private use. Finding it impossible to get into communication with this recluse, we left the place after having thrown a few copies of the gospels into his cell, which we hope he will be reading and meditating on by this time.

Dawo is the first important village of any importance on the Northern road to Tibet. There are about a hundred and fifty houses in the village, which is situated on a large and fertile plain at an elevation of 10,400 feet above sea level. Close by the village is a very large lamasary with 3,000 lamas. On my first visit three years ago, the lamas were very friendly, gave me presents, and allowed me to enter their lamasary where I distributed quite a number of gospels, but on my second visit, a year later, we were practically driven out of the lamasary, hence this time I thought I had better leave them alone. Dawo is of great importance as a center of trade; it is the North-Western boundary of Chagla, the Western boundary of Geshi, and the Southern boundary of Horba. Hence in Dawo we find, besides Chinese and half-caste people, the Chagla, Geshi, Kongtse and Matse. There is a small military official (Tsongye), besides representatives of the above mentioned chiefs. This place has no doubt in former years formed part of the Geshi territory, as at present the peculiar Geshi dialect of the Tibetan language is still spoken in Dawo and understood all the way to Gantse. We called on the queen of the Matse. She resides on the other side of the Da-Chu River, speaks Chinese and Tibetan equally well, is about fifty-seven years old, and has passed through a great deal of trouble. She is chief of one of the Horba states, and formerly resided with her husband in Kianggu. At that time he was the most important and powerful chief of Horba. Sixteen years ago he was murdered by his own people. Owing to the difficulties of finding a successor, the Chinese Government settled the trouble by appointing a Chinese official to the position, and he is now nominally in charge of the Horba states. The Matse queen-widow, with her infant child, was allowed to reside near Dawo, where she reigns over two hundred families. Thus the greatest of the Horba states has become one of the smallest. "On our arrival at Kianggu on the 11th of June we called on the official, who is still living in the old chief's building as the Chinese Government has not yet been able to build him a yamen. The official, as usual, exhorted us not to go beyond Kianggu; but he was not so determined in his objections as in former years, and finally, after having given us a feast, agreed to, and made arrangements for, our journey beyond. Kianggu is a village of about the same size as Dawo, with the only difference that the Tibetans here are all of one clan, and, since they murdered their chief, have been under control of the Chinese official. There is a large monastery, as at Dawo, connected with the village where there are 3,000 lamas. Kianggu, so far as I know, is the only place in the whole of Eastern Tibet where there is a nunnery connected with the lamasary. It was first built at Gantse by the Tsaga lama, a very rich incarnation, but the Gantse lamas had objections and destroyed his buildings by fire; he was later permitted to build at Kianggu, not far from the village. There are two hundred nuns, mostly old women, many of them looking almost imbecile, sitting outside their mud huts or walking about with their prayer wheels. They all shave their heads and use the same kind of garments as the lamas, of whom there are one hundred in the same place. The head lama received us in a friendly way, and allowed us to enter his private room, where we had a long conversation together. He was especially interested in hearing our opinion regarding "Transmigration." He had heard we had nuns in our country, which gave me the opportunity of telling him about our nurses and the good his nuns might do if trained in similar work.

Chuwo is the third state in Horba; there is only a small Tibetan village connected with the large castle in which the chief resides. He is a young man about thirty years old. We called on him, but he did not receive us in a friendly way; gave us no tea, and did not even ask us to sit down. When we spoke to him he never replied, but some of his attendants answered my questions. He seemed quite relieved when we left him, and spoke for the first time, saying "Walk slowly," i.e. "Good-bye."

At Chuwo we leave the Da-Chu River, the road goes southwest over part of the Chantui pasture land—a district noted for robbery—then turns west again down the valley of the Gantse, where the road continues along the Nia-Chu River. This is one of the most fertile valleys in the whole of Eastern Tibet. It is about fifteen miles long, and three or four miles broad. About fifty villages may be counted along the valley. The Gantse village and lamasary is situated in the upper part of the valley, at an elevation of 11,850 feet. This is the leading and most powerful state in Horba, and is at present ruled by a woman who has deposed her husband. Her two sons are living in lamasary; one is ruler of the church and the other is intended for the state. We were not allowed to enter the village and the Chinese official (Tsong-ye) fearing there might be trouble advised us to cross the Nia-Chu without delay, and to proceed on our journey. He told us that H. E. Chao-Erh-feng, the high commissioner of the Tibetan border, had also been forbidden to enter the village with his soldiers; that he had wisely passed the place without taking any notice of them; but he said when the trouble in Derge is settled there will come a day of reckoning for them.

Beri is the last and the smallest of the states, yet the village contains about two hundred families, all Tibetans, no Chinese or half-castes We did not meet the chief, as we only remained there for half an hour, and proceeded to Rombatsa, the boundary between Horba and Derge. The union of these five states consists in the intermarriage relations between the chiefs, and also in the mutual reliance on Chantui for advice and help against the Chinese, otherwise one is struck with the bad feeling between the various states and wonder why they should be called the United States of Horba. They are the fighting people of Eastern Tibet, and ancient history is said to chronicle many of the famous kings of Tibet coming from the Horba States.

t From Rombatsa may be counted forty villages, all within one day's journey. But this

*From *China's Millions*.

†The system of Ula empowers the Ruler to demand the use of any animals he may need for himself or those traveling in his name or under his sanction, and also places the hospitality of his subjects at his disposal.

the representative of H. E. Chao expressed his surprise at our daring attempt to enter those wild regions of Tibet, and was glad we had been able to make the journey without any difficulties. We decided to return to Tatsienlu *via* Batang, as this would give us an opportunity of visiting Horbo, the famous district in Derge for work in teapots, saddles, swords, and guns. We were, however, greatly disappointed, as we found the village did not exceed the usual number of from ten to fifteen houses. There is no special village or place where this work is done; it is a home industry, carried on by individual farmers in the Horbo district in their spare moments. At this place the Dre-Chu makes a sharp turn to the west and is never seen again till we meet it ten miles below Batang. The new road, made by order of H. E. Chao, makes travelling very comfortable between the capital of Derge and Batang, and with the exception of Lhakiala, 16,150 feet high, the other two small passes are not worth mentioning. The Derge territory extends up to the Dashi boundary, within three days' journey of Batang. We had the privilege of staying with the Dashi chief, who resides in a grand four-storied high building. He is the ruler of a very small territory with three hundred families, and is said to be paying a yearly tribute to the Derge State, though otherwise independent of Derge.

It was with joy and pleasure we arrived in Batang late in the evening of the 3rd August, after a very heavy day of rain, and as I entered the village I could not refrain from saying aloud "Bless the Lord, O my soul, and forget not all His benefits." I shall never forget the kindness shown me by Dr. Lofties, who came in the rain and met me, and insisted upon me going to stay with him in the hospital where he was living at that time. It was the same night he took ill, and he was never again to get out of his bed. He died not many days after as a result of typhus and small-pox, which he contracted while attending his patients.

The road between Batang and Tatsienlu is good, but the journey was tedious, as, except in and around Litang, Hokeo, and Tongngolog there are neither people nor cattle to be seen. It is no wonder that seventy per cent. of all the Tibetan trade goes by the northern road. We stayed in the Litang lamasary and got permission to visit the temple and printing establishment, which we found to be somewhat smaller than that of Derge. The Kang-Gjur is here printed in red, while in Derge it is the black print. The lamasary was a disappointment. From all reports we expected to find something enormous, but it proved to be the smallest of any of the larger monasteries we had passed on this journey. We visited some, and passed in all twenty-two lamasaries, of which four alone represented 12,000 lamas, or the twenty-two lamasaries together a number of about 24,000 lamas. The religious aspect of these lamasaries is of least importance. Only a few of the lamas are set apart to attend to the religious services, while the others are taken up with the financial and political part of the work. The lamas are first of all the rulers of the country; second, they are the great trading companies; third, the lamasaries are the fortifications of the country, and the lamas are the real standing army of Tibet. This lama-system is the most difficult problem for the Chinese Government to solve, and is the greatest hindrance in mission work.

It was interesting to see Tongngolog again. It is a fertile place, with about seventy families living in the whole valley. When I first visited this place, ten years ago, Mr. and Mrs. Amundsen were then stationed here in a small Tibetan house. In all these years the place has remained the same, no alteration and no change, with the exception of the Government rest-house which has been added to the village. We were glad and thankful to get back to Tatsienlu on the 25th August, after a mission journey of more than eighty days riding on horseback through practically the whole of Eastern Tibet.

RAILWAY PROJECTS FROM BURMA INTO CHINA

(The railway problem between Burma and Yunnan and its bearing on Britain's future trade with the upper Yangtsze Valley, forms the main subject of Major H. R. Davies' book, entitled "Yun-nan, the Link Between India and the Yangtsze." As Major Davies and his party made the reconnaissance for this road, in the interests of the Government of India, and the Yunnan Company, his book is therefore authoritative, and will stand for many years as the last word on this project. The recent completion of the French Railway to Yunnanfu, drawing the trade of the province to their port of Hanoi, and its possible extension northwards under Chinese capital, connecting with the Hankow-Szechuen line, is a formidable obstacle to the fulfillment of British aspirations. As the Yunnan Railway develops the trade of the Province, French goods will gradually monopolize the market, and as time passes, the door of opportunity will be closed to Britain, in spite of the honest application of the Open Door principle. As with the Japanese in Manchuria, the French in Yunnan, owing to their commanding position, will diminish the commerce of the Province. This possibility is one which must be viewed with solicitude by the Government of India; as unless some effort is quickly made to open up communication with Yunnan from their side, the future trade of the great Upper Yangtsze Valley will gravitate towards Hanoi, as it is several hundred miles nearer than Shanghai.)—*Ed. Note.*

The idea of drawing the trade of Western China towards Burma is by no means a new one. To Captain Sprye is due the credit of being the originator of the scheme, for as long ago as 1831 he drew attention to the advantages of our position in Burma as a means of attracting to our sea ports some of the commerce of the land-locked province of Yun-nan.

In those days railways were not thought of, and it was at first only the opening of a trade route that Captain Sprye proposed. In later years he advocated a survey for a railway line from Rangoon into Siam, and thence northwards to Keng Tung and Keng Hung (lat. 22°, long. 100° 50′). Captain Sprye's proposals, though they had many supporters among the higher officials in British Burma, were not approved of by the Government of India, and nothing more was undertaken than a survey of a line from Rangoon northwards to Toungoo.

The Yun-nan railway question was again revived about 1867 when it became known that the Upper Irrawaddy could be navigated by steamers as far as Bhamo. This town is situated close to the Chinese frontier and it naturally suggested itself that this would be the best route for establishing a trade with Yun-nan. The road from Bhamo to Yun-nan Fu had not been explored by Europeans since the time of Marco Polo, and it seems to have been hoped that a line for a railway might be found in this direction.

This idea was at once dispelled when the reports of Margary and Baber showed that the high mountain ranges and deep valleys which cross the road from T'eng-yueh T'ing to Ta-li Fu would make the route quite impracticable for a railway. Baber's remarks were in some cases so emphatic as to create among those who had not studied the subject very deeply an impression that any railway through Yun-nan was impossible.

Of the high range between the Salween and the Shweli he remarks, "If British trade ever adopts this track, we shall be delighted and astounded in about equal proportions." In another place he says, "By piercing half a dozen Mont Cenis tunnels and erecting a few Menai bridges, the road from Burma to Yun-nan Fu could doubtless be much improved."

Allowing for the slight exaggeration which no one will grudge to a writer of Baber's talents, this description does give an idea of the difficulties of parts of this road. But these remarks were made about the road from Bhamo via T'eng-yuen T'ing and Ta-li Fu to Yun-nan Fu, a line which no one now advocates as possible for a railway. If those who think Baber was therefore opposed to any railway construction, they will see that Baber himself suggests the very line of approach that has now been adopted.

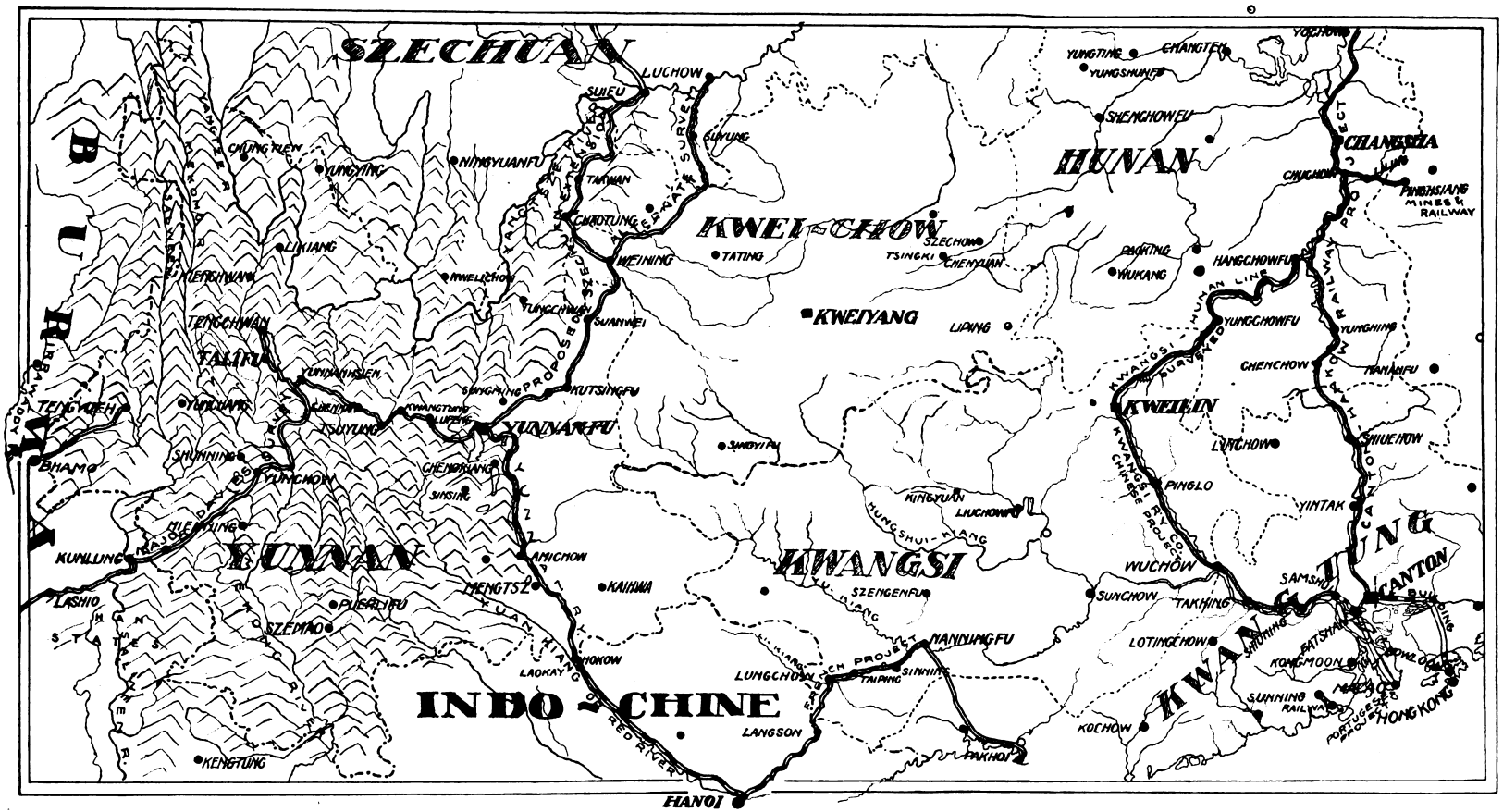
About 1881 a fresh scheme, based on the proposals of Captain Sprye but differing somewhat in the line taken, was brought forward by Mr. A. R. Colquhoun and Mr. Holt S. Hallett. This line was to start from Moulmein, a port which lies in Lower Burma at the mouth of the Salween. From there it was to run eastward to Raheng in Siam, and thence north up the Menam valley, and through Keng Tung and Keng Hung to Ssu-mao T'ing in the southern part of Yun-nan (lat.. 22° 50′, long. 101°).

As far as the physical difficulties of the country are concerned, this was probably the best line that could be found, though from Ssu-mao onwards difficulties would begin. The principal objection to it was that it ran mainly through Siamese territory and would therefore do more to develop Siam than our own possessions. Still, as long as our rule extended only over Lower Burma, this line seemed the only means of getting communication with Western China.

The annexation of Upper Burma in 1885 changed all this. A railway had already been carried northwards from Rangoon as far as Toungoo, and by 1889 the extension to Man-

(*From Everybody's Magazine.*)

CENTRAL ASIAN RAILWAYS.—MAP SHOWING THE GERMAN AND THE TWO RUSSIAN RAILROADS NOW PROGRESSING TOWARD THE INDIAN OCEAN. ALSO THE ENGLISH RAILROADS IN NORTHWESTERN INDIA



MAP SHOWING PROPOSED RAILWAY BETWEEN BURMA AND CHINA, THE PROPOSED EXTENSION OF THE FRENCH LINE FROM YUNNANFU TO SUCHOW AS WELL AS THE ROUTE OF THE KWANGSI RAILWAY

dalay was completed. Meanwhile the Shan States, which lie to the east of Burma and had been tributary to the Burmese king, were explored by our columns. They found here a peaceful trading population and our rule was established without any serious fighting.

The development of the Shan States then naturally engaged the attention of the Government. Surveys for a line were carried out by Mr. Bagley, and the great engineering difficulties of the rise from the Irrawaddy plain were overcome. The line starting from Myohaung, a little south of Mandalay, passes through Maymyo and Thibaw to Lashio, the capital of the Northern Shan States (lat. 23°, long. 97° 45′). The railway was completed up to this point in 1902 and Lashio is still the terminus.

From here the line could easily be carried on to Mong Yaw and a survey has been made of the 75 miles which separate this place from Kun-long Ferry on the Salween (lat. 23° 25′, long. 98° 40′). Though the railway is likely to stop at Lashio for the present, it would doubtless be at once extended to Kun-long if the construction of a line through Yun-nan was undertaken.

The existence of this railway through the Shan States has much simplified the problem of communication with Yun-nan by definitely deciding the direction which such an extension should take. Whatever may originally have been the merits of the proposals of Mr. Colquhoun and Mr. Hallett, their line cannot now compete with an extension of the Kun-long railway. From Moulmein to Ssu-mao T'ing is a distance of 700 miles: from Kun-long to Yun Chou (lat. 24° 30′, long. 100° 10′) is only 145 miles. Moreover Yun Chou is better placed than Ssu-mao for drawing the trade of Yun-nan.

THE YUN-NAN RAILWAY

The original proposers of the Yun-nan Railway had in their minds simply the drawing of the trade of that province towards Burma. It was then hardly realized that beyond Yun-nan lay a far richer and more populous province —that of Ssu-ch'uan. The eventual object of any railway scheme now proposed must be not merely the encouragement of local trade across the Burmese frontier, but the attainment of a through route from India to Ssu-ch'uan and to Eastern China.

It was with this view that in 1898 the Yun-nan Company determined to send out an expedition to reconnoitre for a railway line to connect Kun-long on the Burmese border with some point on the Upper Yangtze to which boats can ascend. Of this expedition I had the good fortune to be in charge, but I do not propose in this chapter to go into details, but merely to confine myself to the general conclusions arrived at.

All that will be necessary here then will be to state as shortly as possible the results of our work.

1. A reconnoissance was made for a railway starting from Kunlong on the Burmese frontier and reaching the Yangtze either at Sui Fu (lat. 28° 45′, long. 105° 25′). (The route reconnoitred is shown on the accompanying map.)

2. The total distance from Kun-long to the Yangtze is 1,000 miles. The greater part of the line would traverse exceedingly difficult country, necessitating in places a grade as steep as one in 25 and possibly a few short lengths of rack. The total cost of a metre gauge line would be perhaps £15,000,000 to £20,000,000 and the time required for construction would be at least ten years.

3. Though there are great possibilities of future trade, the province of Yun-nan is, owing to bad communications, at present so little developed that the railway cannot be made as an immediately paying commercial speculation.

Under such circumstances commercial men are not likely to put their money into a scheme in a foreign country for which such a large sum would be required without any probability of a profit for some years. A guarantee from the British Government of even a low rate of interest would doubtless produce the necessary money. The question therefore resolves itself into this. Is it worth the while of the British Government to spend money on the construction of the whole or any part of the Yun-nan Railway?

The purposes of such a line would be twofold:

1. To draw the trade of Yun-nan towards Burma, and thereby prevent the trade of Western Yun-nan being taken from us by the French.

2. To reach the rich province of Ssu-ch'uan, there to connect in the future with the projected Hankow-Ch'eng-tu railway, thus forming a through route between India and Shanghai—a link in the grand trunk line which will doubtless some day connect Calais with Eastern China via India.

It will be convenient toconsider first the second of these two objects. As far as the Ssu-ch'uan, trade is concerned it does not seem likely that the Yun-nan Railway can compete in the more bulky class of goods against a line coming from the east. While the long, costly, and risky boat journey up the Yangtze gorges remained the only means of bringing foreign goods into Ssu-ch'uan, the Yun-nan Railway might have hoped to draw the trade of this province towards Burma. But now this state of things seems likely to come to an end, for Ssu-ch'uan in the course of a few years will probably be approached by a railway coming from the east.

To find a practicable line from Hankow to Ch'ung-k'ing and Ch'eng-tu has not been an easy task. Many routes were tried and found impracticable, but the perseverance of Colonel Manifold and those who worked with him has overcome these difficulties, and a route has been discovered which is reported to be feasible.

Now cotton cloth and yarn are the principal imports into Ssu-ch'uan, and these come chiefly from Bombay. Let us therefore take Bombay as a starting-point and compare the two routes.

The approach to Ssu-ch'uan by the eastern line entails a somewhat long sea journey of 4,700 miles to Shanghai. But it would not always be necessary to break cargo here. For half a year large ocean-going ships can reach Hankow 600 miles up the Yangtze, and there is no season of the year when ships drawing 10 feet cannot navigate the river up to this point. Cargo could therefore be carried in seagoing ships straight from Bombay to Hankow.

From Hankow to Ch'eng-tu via Ch'ung-k'ing would be about 1,100 miles by rail. A direct railway from Hankow to Ch'eng-tu without touching Ch'ung-k'ing would materially shorten this distance, but as the line via Ch'ung-k'ing seems the more likely to be first constructed, it will be well to reckon the distance at 1,100 miles.

Taking now the Yun-nan route, the voyage by sea from Bombay to Rangoon is only 2,150 miles, but from Rangoon to Ch'eng-tu by rail would be some 1,600 miles.

Sea freights are so cheap compared to railway rates that these extra 550 miles of land travelling are likely to more than counterbalance the advantage of the shorter sea voyage. It should also be remembered that the cost of construction of the eastern line and its working expenses are likely to be less per mile than those of the Yun-nan Railway.

The construction, however, of the Hankow-Ch'eng-tu railway would cut both ways. Though it would probably carry a large part of the trade of Scu-ch'uan, it would at the same time add greatly to the traffic on the Yun-nan Railway, for the two lines together would form the shortest route between India and Eastern China.

This brings us to the question of a through railway route from India to China. In an age when railways are penetrating to the most out-of-the-way places in the earth, it is impossible to suppose that India and China—the two most populous countries in the world—will be content to remain side by side without being connected by railway. I think I am quite safe in asserting that any such railway must pass through Yun-nan.

I do not know that any route passing further to the north, through Tibet or Chinese Turkestan, has ever been suggested. The great height of the mountains and the very long stretches of extremely poor country would, I think, make any such project impracticable. We are then driven to the conclusion that it is only through Yun-nan that India can be linked to the Yangtze and to Eastern China.

Now the first railway to penetrate Yun-nan will undoubtedly be the French line from Tong-king (see map) which is at the present moment actually in course of construction. When the French railway has reached Yun-nan Fu, the capital of the province, it is not likely to stop there. The country between Yun-nan Fu and the navigable part of the Yangtze is so difficult that I do not suggest that this part of the line would be immediately taken in hand. But there can be little doubt that extensions would eventually take place not only to the east, but also to the west.

A Frenchman who has been recently travelling in Yun-nan on an official mission points to Ta-li Fu as the goal of a western extension of the French railway, and places the future western limit of French influence and French commerce at the Mekong (long. 99° 30′). It must be remembered too in this connection that the country between Ta-li Fu and Yun-nan Fu is on the whole less difficult for railway construction than most other parts of the province.

If then we are content to postpone the idea of constructing a railway from Burma into Yun-nan, the fact has to be faced that in the meantime the French will have got possession of all that part of the future Burma-Yangtze line which lies east of Ta-li Fu, or, to put it in figures, about 700 miles out of the total of 1,000 miles will be in foreign hands. Moreover the trade of even Western Yun-nan, the richest part of the province, is likely to find its way to Tong-king instead of as at present to Burma.

As the owners of the Indian Empire and the possessors of by far the largest share of the foreign trade of China, we can hardly remain indifferent spectators of the construction by foreign powers of the connecting link between these two countries, nor can we well sit still and see the trade of Western Yun-nan snatched from our very doors.

I am not alluding here to political rivalry. The break-up of China which once seemed so imminent appears likely to be altogether avoided. If in spite of appearances such a catastrophe should take place, the political influence in any particular province will naturally go to those who have spent their money and labor in developing it.

But it is not on political grounds that I would base arguments in favor of the Yun-nan Railway. The construction by the French of their line from Tong-king to Yun-nan Fu and its subsequent extension both to the east and to the west are matters of most legitimate commercial enterprise. The most difficult part of the Yun-nan Railway would be that which lies between Yun-nan Fu and the Yangtze, and here, it must be remembered, the French are in no better a position than ourselves. Here both nations have to face the same difficulties. The French Government have not hesitated to give their support both moral and financial to the undertaking. If the British Government decline to follow this example, they must also be prepared to lose in the future the advantages of such a policy.

It is not my intention to pose as an adviser of the Government but merely to state the facts. The Foreign Office have all the threads in their hands, and can best judge whether the expense would be justified by the end.

I would, however, remark that there is a middle course which I believe would be the best to adopt. I do not think that it would be necessary, or even desirable, that the whole line from the Burmese frontier to the Yangtze should be undertaken at once. Such a project is too vast to be carried through in any way but by gradual stages.

My suggestion is that for the present the Burma railway should be extended from Lashio to Kun-long, and the Yun-nan Railway constructed from Kun-long to Yun Chou.

This town could be reached in about 145 miles from Kun-long at a cost of about £1,500,000 to £2,000,000. It is the commercial centre of a district which suffers much from want of communications with good markets. An extension of our railway system to Yun Chou will bring within range of Burma many parts of Yun-nan hitherto inaccessible, and will materially shorten the distance to places which already trade with us.

At present nearly all our trade with Yun-nan comes through Bhamo. The following table gives the comparative distances from Bhamo and from Yun Chou to different places in Yun-nan.

	To Bhamo.	*To Yun Chou*
From Teng-yuen T'ing	112	161
From Yung-ch'ang Fu	173	100
From Hsia-kuan (near Ta-li Fu)	271	109
From Ch'u-hsiung Fu	394	232
From Yun-nan Fu	491	329
From Ssu-mao T'ing	434	185

But the improvement of the trade between Burma and Yun-nan would be only one object of this extension to Yun Chou. It would also be the first step in the joining by railway of India with Shanghai. Having thus given an earnest of our intention to connect Burma with Yun-nan Fu, we should be in a position to enter into negotiation with the French for a joint construction of that part of the line which would join Yun-nan Fu to the Yangtze.

To come now to the question of the trade of Yun-nan. The most prosperous part of the province is that which comprises the series of fine plains which lie to the north, the east, and the south of Ta-li Fu (lat. 25° 42′, long. 100° 10′). The commercial centre of this region is Hsia-kuan, which lies eight miles south of Ta-li Fu. All this country and even places south considerably to the east of this are at present supplied from Burma, for from Hsia-kuan to Lao-kai on the Tong-king border is considerably further than from Hsia-kuan to Bhamo.

When the French railway is completed from Tong-king to Yun-nan Fu, while the Burma railway terminus is still at Lashio, this advantage will disappear. For from Hsia-kuan to Bhamo is 280 miles against 220 miles from Hsia-kuan to Yun-nan Fu. I have taken Hsia-kuan as an instance, but naturally with the trade of Hsia-kuan would lie nearer to Yun-nan Fu than to Bhamo or Lashio.

If we sit still and do nothing, we shall therefore lose the trade of a great part of even Western Yun-nan. But if we construct our railway even as far as Yun-Chou, we shall easily retain this, for from Hsia-kuan to Yun-nan Fu the French terminus is 220 miles, and from Hsia-kuan to Yun Chou 109 miles.

There is, however, another railway project which must be noticed here—the proposed line from Bhamo to T'eng-yueh (Momien) (lat. 25°, long. 98° 30′). A survey of this route has been made; the distance by the line that a railway would follow is 122 miles and the approximate cost is estimated at less than a million pounds.

Though there is no railway at present at Bhamo, this place is connected by river steamers with Rangoon and with the railway system of Burma at Katha, and would thus form a suitable starting-point for a railway into Yun-nan. It is moreover by the Bhamo route that most of the present trade between Yun-nan and Burma is carried on, and the line would thus have the advantage of following a well-established trade route.

The construction of a railway between Bhamo and T'eng-yueh would be, comparatively speaking, an easy and cheap undertaking, and it would doubtless pay after a time. Taken by itself it would be a most useful line, but before committing ourselves to its construction and the abandonment of the Kun-long-Yun Chou route, it is essential to ascertain whether an extension eastward to Hsia-kuan is possible.

In the north-east corner of the T'eng-yueh plain there is a gap in the hills through which the line could probably reach the Shweli from the Salween, and beyond this the valley of the Mekong running between wall-like ranges of hills, are likely to prove extremely difficult obstacles to the further progress of a railway. It would not, however, be safe to pronounce these obstacles insurmountable until the results of further reconnaissances of this country are made public.

A line to T'eng-yueh only (if extension eastward proves impossible) not only does not get us any further in the joining of India and Eastern China, but it is extremely doubtful if it would be effective in retaining for us the trade of Hsia-kuan, a place which I have already mentioned as the most important commercial centre in Yun-nan. The distance from T'eng-yueh to Hsia-kuan is 159 miles and from Yun-nan Fu to Hsia-kuan 220 miles. The balance of 61 miles is perhaps enough to ensure the retention of this trade for the present, but it must be borne in mind that the French by extending their line westward can bring the advantage in distance over to their side.

Moreover Yun Chou is much more favorably situated than T'eng-yueh for increasing our trade with Yun-nan. T'eng-yueh is already connected with Bhamo by a mile road which has been shortened and improved in the last few years. Were the railway extended to Yun-Chou the trade between T'eng-yueh and Bhamo would doubtless continue as usual. But Yun Chou is so situated as to be much nearer than T'eng-yueh to many places which trade with us already, and to many more with which we at present have practically no dealings. Yun Chou has also the great advantage that, lying as it does far to the eastward of T'eng-yueh, it is in a much better position than the latter town to compete with the French railway.

The following table of distances will make this clear:

	Distance in miles to T'engyueh.	*Distance in miles to Yun Chou.*
From Yung-ch'ang Fu	61	100
From Yun-lung Chou	122	180
From Hsia-kuan	159	109
From Li-chiang Fu	264	222
From Shun-ning Fu	137	24
From Ching-tung T'ing	263	102
From Mien-ning T'ing	216	55
From Wei-yuan T'ing	268	107
From Ssu-mao T'ing	346	185

It will be seen from this that Yung-ch'ang and Yun-lung are the only two places of any importance which are nearer to T'eng-yueh than to Yun Chou, while in the case of Yung-ch'ang the distance between it and Yun Chou is so small that the Yun Chou railway would be very useful to that place.

Hsia-kuan, the centre of the richest part of Yun-nan, is brought considerably nearer, and the last five places can be brought into trading relations with us where they would hardly be affected by a line to T'eng-yueh.

Still if it turns out that it is feasible to extend the T'eng-yueh line to Hsia-kuan, this route certainly has some advantages. There is no denying the fact that the railway to T'eng-yueh can be much more easily and cheaply constructed than that to Yun Chou. This undoubtedly makes it the more tempting project of the two to statesmen hampered by financial considerations. But, unless the possibility of an extension eastward is proved, it would seem well to think twice before committing ourselves to a merely local line, and renouncing the project of through communication between India and Eastern China.

To summarise shortly the conclusions arrived at:

1. The construction of the whole line from Kun-long to the Yangtze is too vast a project to be undertaken at once.

2. But if we are content to do nothing in the way of railway extension into Yun-nan, the French will in the future be in possession of the greater part of the line which will some day connect India with Eastern China, and will also be in a position to take from us the trade of Western Yun-nan.

3. To counteract this the Burma Railway should be extended from Lashio to Kun-long and the Yun-nan Railway constructed from Kun-long to Yun Chou, with a view to its gradual extension eastwards in the future.

4. If the proposed railway from Bhamo to T'eng-yueh can be extended eastward to Hsia-kuan, it must prove a formidable rival scheme to the Kun-long route, but if T'eng-yueh is to be the terminus it is likely to be ineffective in retaining the trade of even Western Yun-nan.

Before quitting the subject of railways in China, one more question must be touched on. The Chinese have in the last year or two evidently become alarmed at the power which they consider railway concessions are likely to give to foreigners in China. In many parts of the country agitations have been started with the object of getting all railway construction into Chinese hands. Nothing is more natural than that such ideas should prevail, but if foreign diplomatists are content to give way to these opinions, the opening up of China by railways is likely to be considerably delayed. The average Chinaman would be very chary of entrusting his capital to officials to build a railway; moreover the modest rate of interest paid by a railway company would not be likely to satisfy the trading instincts of the Chinese investor. So far the attempts of the officials to raise money for railway construction seem to have been a failure, and in one or two cases extra taxation has been suggested as the only means—a measure hardly likely to make railways popular.

Quite lately, however, (1907) the patriotic desire of the Chinese to construct railways themselves without the aid of either foreign capital or foreign engineers has in some provinces actually resulted in offers of considerable sums of money from leading merchants and others to be invested in railway construction. Whether the money would be forthcoming for such a hazardous investment as the Yun-nan railway must remain doubtful. However, an encouraging sign for the future is to be found in a recent application made by the Viceroy of Yun-nan for the services of an American trained Chinese railway engineer. That all railways in China should eventually be constructed and worked by the Chinese is both natural and inevitable, and if the Chinese Government would undertake the construction of the line from the Burmese border to the Yangtze, it would be a satisfactory solution to all concerned. Two things are necessary—a sufficient number of skilled engineers, and some honest men to be in charge of the finances. Time will doubtless supply the former, but will honest men ever be found?

THE YUNNAN RAILWAY

The completion of this road has been announced. The following information has appeared in *The Times* from a Paris correspondent:

The course of the line was surveyed in 1900 and 1901. It traversed the Nam-ti valley, passing near Meng-tsz, reaching Ami-chu at the 139th mile and Y-Lang-Hsien at the 251st mile with the terminal station at Yunnan, giving a total length 292 miles. The scheme was adopted in 1901 and was estimated to entail an outlay of £3,800,000. The transport of the requisite materials gave rise in the first instance to serious trouble.

The construction of the railway was definitely approved early in 1904, when the works were put in hand. At the date the railway from Haiphong to Lao-Kai was still unfinished, and was not expected to be ready until 1906. This involved a great increase in coal, as the material had to be transported by wagons, barges, and mules. Another difficulty was caused by the scarcity of labour in the country traversed, for contrary to expectations, it was found to be very sparsely inhabited, and workmen had to be brought from places as far distant as Canton and Tientsin. During he month of October, 1906, and throughout the year 1907, when the work was expedited to the utmost, there were not less than 60,000 people employed, 40,000 of whom were actually engaged on the construction. The capital originally estimated to be required was found to be wholly inadequate and the cost has reached £6,600,000. In consequence of an arrangement made with the French Government and the colony of the Indo-China, the requisite funds have been raised, and in spite of serious financial embarrassments, no delay has been caused to the work.

The line is of metre gauge throughout; the maximum gradients between Chen-Kiang and Yunnan are 2.5 per cent, and between Ami-chu and Chen-Kiang they amount to 1.5 per cent. The minimum radius of curves is 5 chains. There are 147 tunnels, with a total length of nearly 9½ miles. The altitude above datum at the starting point at Lao-Kai is 295 ft., while at the 93rd mile it reaches a height of 5,576 ft. From this point the line descends in the direction of Ami-chu, situated at an altitude of 3,486 ft.; it attains at Chen-Kiang an elevation of 5,362 ft., and at Chouei Tan a height of 6,624 ft. At the terminus, at Yunnan, the altitude is 6,186 ft. above datum. The rolling stock now actually in use consists of 51 locomotives, 106 coaches, and 530 trucks and vans.

The railway already obtains an important amount of traffic proceeding in the direction of China. The passenger traffic in 1908 included 61,811 Europeans and 1,478,077 natives, while the receipts for that year reached approximately £120,000.

With the completion of the French railway to Yunnan, the Chinese have demonstrated considerable interest in prolonging the road

and lakes and fertile vegetation. Around are mountains rising to nine thousand odd feet. From here the country is more or less unsurveyed.

From Weining-chow, there is also a branch line surveyed going off in a northwesterly direction to Chaotong-fu, thence up to Takwan and Laowatan, and down by the river to Suifu, which is of course connected with Luchow by the main river. This would not be the main route, however. This would run via Yuning-hsien (3000 ft.), on through the more populous country on to Luchow, where the Chungking and Yangtse trade would be handled on the river.

Luchow is an enormously rich city on the Upper Yangtze.

Whether this proposed line will ever be laid down or not, I do not believe anyone living can tell. If it once became an accomplished fact the exports from the rich province of Szechwan would go ahead by leaps and bounds As it is the Tonkin-Yunnan line will do much in this direction. Goods for the interior which now go to Shanghai and thence up the Yangtze as far as Ichang by steamer, and thence to Chungking by the risky junk transit through the rapids, will come direct to Haiphong—or perhaps with British goods to Hongkong, tranship for Haiphong, thence by rail to Yunnanfu and overland by pack horse.

From Yunnanfu to Chungking by road is practically a month—about as long as the journey from Ichang to Chungking. So that a great saving of time will be effected as it is, at the same time doing away with the danger of partial or total wreck in the Upper Yangtze.

"M. Doumer's scheme involved the construction of 3,200 kilometers of railway. He thus summarises it:

" 'Ce réseau, qui doit traverser l'Indo-Chine entière, de Saigon au Tonkin, mettant en communication avec les ports de la côte les riches vallées de l'Annam, reliant à la mer par des transversales les grands biefs navigables du Mékong, pénétration en Chine par la vallée du Fleuve Rouge, aura un developpement d'environ trois mille kilomètres.'

"The Conseil Supérieur referred the scheme to a commission on the 14th of September 1898, and as a result of their report the construction of a comprehensive system was authorized for the colony, including a line from Haiphong to Hanoi, to follow the valley of the Red River northwards, and to enter the province of Yunnan.

"M. Doumer's next step was to proceed to Paris in order to obtain the confirmation of the French Chamber. This did not prove a difficult task, the scheme being in due course sanctioned by the law of the 25th December of 1898.

"Meanwhile, shortly after M. Doumer's arrival in Indo-China, steps had been taken to remind the Chinese of their obligations under the Convention of 1895, and an exchange of notes had taken place between the French Minister and the Tsung-li Yamen on the 12th of June 1897. At the same time the right to continue the Phulangthuong-Langson line to Lungchow, some forty miles within the Chinese border, had been recognized.

"On this point being satisfactorily settled, arrangements were made with the Fives-Lilles Company to increase the gauge of the Phulangthuong-Langson line from sixty centimetres to one metre, and to undertake the construction of the necessary extensions from Phulangthuong southward to Hanoi and northward to the Chinese frontier. This work was accomplished at a cost of 20,000,000 francs.

"Surveys for the extension on Chinese territory were then undertaken, but subsequently, owing to labor difficulties and on commercial grounds, the scheme was for the time being abandoned.

"This event occurred in the autumn of 1898, while M. Doumer's scheme was still under consideration by the commission appointed by the Conseil Supérieur. Earlier in the same year steps had been taken by the French Government to secure further rights in the south of China. The action of Germany, Russia, and Great Britain in the north had afforded the necessary opportunity, and in order to equalize matters, on the 12th of April 1898, China acceded to the following demands on the part of France:

" '1. Kwangchauwan to be leased as a coaling station to France.

" '2. The right to construct a railway to Yunnanfu from the Tongking frontier.

" '3. A promise to be given not to alienate any territory in the three provinces of Kwangtung, Kwangsi, and Yunnan which border on the French frontier—

" '4. The Chinese Government to agree that if ever they constitute a postal department independent of the Maritime Customs, and if a European is to be appointed as Director thereof, France shall have an equal right with that of other Powers to nominate a candidate for the post of Director.'

"The news caused great satisfaction in Paris, but in London some apprehension was felt as to the intended scope of these arrangements. It was pointed out by the China Association that there was no necessity for these guarantees against the non-alienation of territory, and Her Majesty's Government was urged to contest any arrangement that could in any way be 'held to imply exclusive rights of industry or trade, or anything short of equality of opportunity in commercial and industrial enterprise of all kinds.' The matter was allowed to proceed, however, without further protest.

"A few days later a French missionary was murdered in the region of Pakhoi, in consequence of which the French Minister demanded, as a compensation, payment of an indemnity, the construction of a memorial chapel, and the right to construct a railway to join what was referred to as the 'Lungchow-Nanning line' with the sea-coast. As no previous mention had been made of the grant of a concession for a railway between Lungchow and Nanningfu, Lord Salisbury instructed Sir Claude MacDonald to apply for information to the Tsung-li Yamen. The latter on being approached denied having granted any such concession.

"M. Doumer, however, writing as late as 1905, claims that the concession exists, though in justice to the Chinese it should be remarked that further inquiry, while not freeing the matter from doubt, tends to the conclusion that this claim cannot be sustained.

"On the 8th of June the grant of further concessions was announced in Paris. The existence of the right to continue the Langson-Lungchow line being assumed, it was stated that France had obtained the right to construct a railway between Pakhoi on the Gulf of Tongking and Nanningfu in the West River Valley, thus completing 'the network of commercial roads penetrating South China from Tongking and the neighbouring region.'

"But this was at least a very liberal if not a somewhat incorrect interpretation of the understanding that had been arrived at. The fact was that notes had been exchanged with the French Minister to the effect that France would construct this line if any other Power offered to do so, and it was denied that any agreement giving the railway to the French had been signed. Subsequently, in November 1899, the Yamen, reiterating their former denial, gave a solemn assurance to Sir Claude MacDonald that the only concession that had been granted to France in that region was that for a line between Langson and Lungchow, a distance of some 40 miles.

"Since that time no further concessions have been obtained, and therefore at the present time the right to construct this line, and that to Yunnanfu, must be taken to represent the sum total of French railway rights in South China."

With Mr. Kent's clear exposition of the situation before us, one of the most significant phases of recent Chinese railway history is told in the following paragraph from the Shanghai local press under date of January 5th, ulto.

Peking, Jan. 5:—"The French Minister has demanded of the Waiwupu, that the concession promised some time ago to a French Company for the building of a railway from Lungchow in Kuangsi, up to which place the railway runs from Hanoi, to Nanningfu be given to the said French Company. The gentry of Kuangsi have lately protested against the building of this railway by France, as they intend to build it themselves. The Board of Communications had thereupon authorized the Governor of Kuangsi to let the Chinese Company make the necessary surveys."

The Board of Communications has dispatched the Engineer of the Peking-Hankow Railway, Hsi Chi-ping, with a party of surveyors, to Kuangsi, to map out the road for the benefit of the local officials and gentry who propose to build the line. The indications are that China will strain every political and financial resource to build these lines herself rather than concede the demand of the French Minister.

It will be remembered that early in 1906 it was reported that the Central Government at the request of H. E. Chang Ming-chi, the Governor of Kwangsi Province, ordered the Board of Finance to draw the amount of one million taels from the government treasury for the expenses of the newly organized Kwangsi Railway Company line, because the amount was produced by the sale of substantial official rank in Kwangsi.

After being informed of this matter, it is asserted the Wai-wu-pu sent a long telegraphic despatch to the Governor of Kwangsi explaining that there was some misunderstanding among the natives of Kwangsi concerning this railway enterprise. The concession for building the Pakhoi-Nanning Railway was granted to the French Government at the demand of M. A. Gerard, the French Minister in Peking in 1899, by the Tsungli Yamen. The Chinese Government agreed to build that line with Chinese and French capital. According to the terms of the agreement between the Chinese Government and the French Minister concerning the Lungchou Railway any extension beyond Lungchou should also be constructed by a joint Stock Company formed by Franco-Chinese capital.

The French Minister demanded permission to start this enterprise in 1904.

The fact that France has at this late date revived her claims and demanded the concession to Nanningfu, is somewhat disquieting in view of the solemn assurance given to Sir Claude Macdonald by the Tsung-li Yamen—that the only concession granted to France was for a line between Langsen and Lungchou, a distance of some 40 miles.

A few years ago, the news of such a demand from France would have aroused bitter criticism from the British press, and their Legation at Peking would have solicited some further assurance from the Chinese government that the request be refused. But so far apparently this new item has failed to stir British public opinion.

The silence of great Britain is all the more marked, as British capitalists have already invaded the province seeking concessions and contracts. The correspondent of the *North China Daily News* at Kweilin, the provincial capital of Kuangsi, under date of Oct. 29th ulto., writes:

"There are at present in the city four Europeans, representatives of Messrs. Pauling & Co., who have just returned from making a survey of the road between Kweilin and Tsuenchow on the Northern frontier of the province, with a view to a railway between these two places. Whether this survey will lead to anything definite or not, is not yet certain, for although no difficulty was met with on the road in the way of family cemeteries, etc., as has been the case so often in other parts of China, yet the financial support so far given to the project has been so poor, that it is doubtful whether the line, if it depended on this alone, would materialise for some time to come. The gentry in the South are very desirous that a line should be run connecting Nanning, Pose, Wuchow, and Pakhoi, and so are not willing to subscribe to a venture from which they could not hope for personal advantages. The principal raison d'être of the Kwei-Tsuen line would be of course to connect the capital with the Yueh-Han Railway. This would require, however, the financial co-operation of the Hunanese, which they are not willing to give, as the advantages to be gained would be greater for Kuangsi than for Hunan. Yet the affair is judged to be of great importance by both the Central and Provincial Governments and now that a projected foreign loan has fallen through, we learn that the money may be raised by the joint efforts of the Provincial Treasury, the Ministry of Communications and the Military Board. As the province was exempted from subscription to the Boxer indemnity, there is in reserve between two and two and a half million taels, which may be devoted to this object and this amount would probably cover half the cost of the line."

It is apparent that any scheme of railways for Kuangsi must include not only a connection for the provincial capital at Kweilin with the Canton-Hankow line, on the north, but also an outlet to the south along the Kwei Kiang to Wuchow. Both British and French include Wuchow in their rather hazy "spheres of influence" in South China, and the fact that British interests have taken the initiative in invading the territory, may explain the demand of the French Minister for a share in its development, by the Nanning concession.

northwards towards Szechuen province under their own supervision. This move is undoubtedly intended to forestall any attempt on the part of French interests to claim a concession or right to construct the line. The excessive cost of the Yunnanfu line—over $60,000 gold per mile—with the consequent high maintenance, operating and fixed charges, combine to establish a high passenger and freight tariff, if the line is to yield a fair return on the capital. While the most optimistic French authorities concede that the line will prove highly remunerative if the tariff is reasonable, there is a larger element who maintain that unless it is prolonged northwards to tap the rich province of Szechuen, the road will never pay, and its upkeep will prove a heavy burden on the Government, who has guaranteed the construction bonds. So, anticipating the completion of the line to Yunnanfu, the French have been preparing public opinion for the necessity of the extension northwards. At the same time China, having learned well her lesson of the last ten years, is planning to checkmate the next move of France.

While the railway just completed has been free from unpleasant diplomatic situations, a deep undercurrent of distrust has been engendered in Chinese official minds through contact with the French railway builders.

The *London and China Express* commenting on this important subject says:

Should the Yunnan Railway be prolonged to Szechuan? Two Frenchmen, who should be in a position to judge, give an emphatic negative to this question. One is M. Robert de Caix, director of the *Bulletin du Comité de l'Asie française*, who has just returned from a twelve months' tour in the Far East; and the other is Commander d'Ollone, recently returned from his explorations in Western China. The latter, speaking at a dinner of the French Colonial Union, said that Frenchmen must definitely refuse their help in financing the Chinese in such a project. In the first place, because the Chinese half of the line, Yunnan-Sen-Szechuan, would take its entire traffic from the French half, Yunnan-Sen-Haiphong, China supplying Yunnan with its needs direct; secondly, because it would enable China to put 100,000 men on the French frontier, thus entirely altering Indo-China's conditions of defence; and thirdly, because in the division of Chinese public works among the Powers, France should claim her share in regions offering better financial results.

Mr. Edward J. Dingle, the Singapore journalist who travelled through Yunnan on foot, in a special article to the *Shanghai Mercury*, says "of the situation":

And while things go along peaceably in the province and just over its borders, the Chinese do not forget that the pet ambition of France still is to take Yunnan as French territory; but China is determined that Yunnan is Chinese, and that Chinese it shall remain. French and Chinese punctiliousness and politeness everywhere synchronise, but underlying the Chinese mind there is a distinct antagonism to the Frenchman as compared with the feeling towards an Englishman. None of the French residents of the capital, although they are invited out by the mandarins and made at times a good deal of fuss of, could say that anything approaching mutual friendliness exists. China submits because she must; but will she always? She does not openly dwell upon the past, but it seems to be her only guide for the future. And it seems that China is telling France that unless she will realise the truth, unless she will learn that the profound opposition between the respective civilisations give no more ground why the French should treat the Chinese as barbarians than they them, unless the Chinese are to be treated as a civilised Power and have respect given to their custom and their law, unless France will accord China the treatment she would accord to any European nation and refrain from exacting conditions she would never dream of imposing on a Western Power—unless she will do this, there can be no hope of peace between the two countries.

With this philosophy China is not content. She is making preparations to be in a position to be able successfully to defend Yunnan in time of emergency. Go any day you wish over the roads leading into the capital and you will find string after string of pack horses laden with foreign ammunition and rifles—in a tramp from Chungking to Yunnanfu, a distance of upwards nine hundred miles. I was never out of sight of this new military equipment. And it is all for the specific purpose of keeping the French out of Yunnan.

During the past few months I have had the opportunity of close observation in Yunnan into the international relations of the two countries, and this, backed up by the guarded replies from several Chinese officials in Yunnanfu, has led me to believe that it is as well that France is maintaining an efficient Annamese army over the border, for the time may come—not yet, of course, because China is not yet strong enough—when China will rise in her might and say: "Please go out; we want, and we will have, no more of you."

This is not exaggeration; it is the candid opinion of a French resident in the capital who is in close contact with everything that goes on from the consular point of view. And this may happen, in a decade or two to all foreigners—at any rate French people think that it is not the intention of the Chinese to allow Yunnan to become their Eldorado.

During the construction of the railway the French employees on the railway did much to stir up the strife, n treating the Chinese in a manner more as barbarians han as the excellent labourers they undoubtedly are.

However, it could not be said that the French are not making headway in Yunnanfu; they decidedly are. The hospital is French, the city post office handling most mail matter is French, the single hotel is French, the only foreign emporiums are French; and, as follows, most of the foreign residents are French—the missionaries and the consul general are about the only Britishers in the place. Almost without a single exception all the foreign goods obtainable in the Chinese godowns are French. The French consulate is a palatial building with 120 rooms and spacious grounds; the British consulate is a tumbledown resurrected Chinese house. The French consul-general has with him a vice-consul and an appropriate staff; the British consul-general lives in almost solitary confinement, among none of his own kith and kin. Whatever foreign trade is developed France has secured; Britain is too late, and it seems she can now not do much—there are no British traders there to do it. And with the advent of the railway, if she acts diplomatically France may yet do more and in some measure attain her ends in securing a share of the wealth of the province. But the territory, in my opinion, never."

So it is quite clear that any further extension of French influence in Yunnan will be stubbornly opposed by the Chinese. Under Viceroy Hsi Liang, an elaborate scheme of railways radiating from Yunnanfu was proposed and some preliminary studies and surveys made; and according to the Yunnan correspondent of the *North China Daily News*, all the cities of the province were taxed on the understanding that the revenue was to be devoted to railway construction. The same authority states that none of this money is now on hand for the purpose, intimating that it has gone to fill the pockets of the officials.

However, coincident with the entrance of the French railway into the provincial capital, the arrival of two American railway engineers is also announced. They have since departed to survey a route from Yunnanfu to Szechuen for a line to be constructed with Chinese capital. The proposed route will follow the one already surveyed by the French—up through Hsuenwei, Suifu and on to Chengtu.

A correspondent of the *Shanghai Mercury* writing from Yunnanfu, on August 16th, ulto., describes this French project as follows:

For a very considerable time the route has been surveyed, and from time to time rumours have gained currency that the work would soon be started, but up to the present time nothing has actually been accomplished. More than one expert has given the opinion that it is a matter of absolute impossibility to lay down a line here over the mountains, and see no likelihood of the traffic being catered for in any other way than by means of the horses and mules and the coolie labour now used, and one who knows the country and who has known the arduous toil which travel in this part of the country means would quite agree that only by the spending of an enormous amount of money—which would probably never be repaid—could a railroad be built. The mountains are all laid down the wrong way, so it seems. But there are many huge difficulties presented which only a railroad engineer would understand.

In some places the proposed route takes one over country eight and nine thousand feet above the level of the sea, descending the lowest point to three thousand feet.

Leaving Yunnanfu, the present terminus, 6,400ft. high, the route runs through the important city of Yanglin, thence on to Yilong (8,000ft.), dropping again at Maling-chow to 6,980ft., with a gradual descent to Chu-ching-fu, the centre of an important district, itself on the main road. The line would then leave the main road to Kweichow province, at Chanyi-chow, and thence through very mountainous country, would reach Hsuanwei-chow, undulating between heights of 7,500ft. and 6,000ft. The country around here seems impossible.

From Chu-ching-fu, the route is traced through the valleys and over a range of mountains which runs in a northeasterly direction to Weining-chow, 7,500ft. above the level. This is perhaps the most important city in the route up to Luchow on the Yangtze. It is practically on the borders of Kweichow and Szechwan, in a district of surpassing beauty, in the midst of rolling hills

THE KUANGSI RAILWAYS

The last few months have witnessed a revival of French interest and activity in their dormant claims to preferred railway rights in the provinces bordering on Indo-China.

Article V of the Convention between China and France, signed at Peking the 10th of June 1895, provided as follows:

"It is understood that China, for the exploitation of its mines in the provinces of Yunnan, Kwangsi and Kwangtung, will address itself in the first instance to French commerce and engineers, the exploitation remaining otherwise subject to the rules and edicts by the Imperial Government which affects national industry. It is understood that railways already in existence or projected in Annam can, after mutual agreement and under conditions to be defined, be prolonged on Chinese territory."

Under these provisions and a subsequent exchange of notes in 1897 the right to extend the existing Langson line across the border to Lungchow, but construction operations were suspended at the border. In Mr. P. H. Kent's work on "Railways in China" he refers to the history of French Railway rights in South China as follows:

"At this time the only railway that existed in Tongking was a small 60-centimetre gauge line originally constructed for military purposes in 1886 between Langson and Phulangthuong; no other railways were projected. Ideas, however, existed more or less hazy perhaps, but based on the writings of Francis Garnier, as to the line of country that railways would follow when they came to be constructed and the fact that no definite scheme had been discussed detracted nothing from the value of the rights that had been secured. And here we may conveniently pause and recall the distinction drawn in the chapter introducing the "Battle of Concessions" era, where it was remarked that, like that of Russia, the railway policy of France has been a means to an end: an incident in a larger policy which can only be described as in intention a policy of colonization.

"In the brief sketch in which we have indulged of the expansion of the French Colonial Empire in the south-east corner of Asia lies the proof of the soundness of this conclusion. As Russia descended from the north, so France moved northward, and when it is remembered that four-fifths of the capital required for the construction of the Peking-Hankow Railway was subscribed in Paris, the supposed ambition for a trans-China railroad putting these great allies into direct rail communication was something more than a Russo-phobe chimera. It was a possible danger that has passed away through war, improved understanding, and other circumstances, but in the frenzied period prior to the coup d'état of 1898 it was a scheme to anticipate and, both in Chinese and British interests, to combat.

"To return, however, we now commence the details of the history of railway progress in South China, and in some measure also of that in Tongking, it being impossible entirely to dissociate the two.

"Our starting-point, with the exception of the light military railway between Phulangthuong and Langson in Tongking, is the fifth clause of the Convention of 1895. This clause, as already observed, seems to indicate the existence of a railway policy, but those responsible for its inclusion in the convention were content to regard it for the present as a foundation merely of future schemes. More pressing internal affairs then engrossed the colonial government to the exclusion of a forward policy, and it was therefore left to M. Doumer to devise a policy and to put it into execution.

"M. Doumer was appointed Governor-General of Indo-China in 1897. Energetic and ambitious, he was perhaps the beau-ideal of a colonial governor. Under his auspices an era of progress was rapidly inaugurated, and the adoption of a considerable railway programme was urged upon the French Chamber.

"Leaving France in January 1897, M. Doumer arrived at his post in the following month. Most of the year was spent in familiarising himself with local conditions, and to ascertaining the railway requirements of the country. Towards the close of the year he was ready with a scheme, which was laid before the Conseil Supérieur of Indo-China.

"It is interesting to note that in introducing his scheme, M. Doumer commented in tones of almost noble indignation on what he was pleased to describe as the hardihood of Great Britain in contemplating the penetration of Yunnan and Szechuen by way of Burmah. He took refuge for himself and his auditors, however, in a comforting reflection. 'Pourtant, si nous savons vouloir, nous devons triompher dans cette lutte pacifique. Nous nous trouvons favorisés grace aux facilités que nous donne la vallée du Fleuve Rouge pour atteindre le Yunnan.'

FAR EASTERN RAILWAYS

HEHLENGKIANG RAILWAY PROJECT.—The wheat district lying in this province is to be tapped by a light railway between Hailun and Suihwa, a distance of 240 li. The capital is being subscribed by the Chinese merchants and the prospect is bright for the early commencement of work.

TESTING PHILIPPINE HARDWOODS FOR RAILWAY TIES.—The Bureau of Forestry has concluded arrangements with the Philippine Railway Company for a test of the more important woods for sleepers. The company will lay an experimental mile of track in Panay with molave, ipil, yacal, tindalo, dungon, and a few others so that data as to durability may be secured. The different sections will be carefully watched and the changes in the several woods noted from time to time.

BEACON HILL TUNNEL.—The last brick was laid in this important construction in February.

THE SOUTH MANCHURIA RAILWAY DEBENTURES.—For the purpose of increasing the rolling stock, extending the workshops and harbor at Dairen, the floating of 40,000,000 yen debentures was authorized at a recent meeting of the directors. During this meeting President Nakamura stated that in the near future the railway must be prepared to handle at least 4,000,000 tons in one direction.

YOKOHAMA-HACHIOJI RAILWAY.—Negotiations have been concluded with the Railway Board whereby the latter guarantees interest at 3.5% per annum on the cost of construction after April 1 and the charter is to run 20 years. The cost of construction includes paid up capital of 2,900,000 yen and a loan of yen 690,000.

SIAMESE SOUTHERN RAILWAY.—A large consignment of steel rails were received from Belgium last month at Bangkok and Trang while the construction at Singoro and Trang is being carried on by a force of several thousand coolies. At Petchaburi 35 kilometers of earthwork is reported complete and bridge work is underway.

PAKNAM RAILWAY COMPANY, LTD.—The report of this company for the half-year ended December 31st shows gross earnings to the amount of Ticals 78,661.17 and the expenditure Ticals 36,293.72, leaving a net revenue of Ticals 42,100.67. The shareholders received 10% for the half year and, added to 12% for the previous term, made 22% for the year besides paying bonuses and other fees. Of the traffic receipts Ticals 63,767 were received from passenger traffic and Ticals 9,852.62 from freight.

FIFTY YEARS OF INDIAN RAILWAYS.—A White Paper issued by the Government, covering the last fifty years of railway development, states that in 1858 300 miles of road were opened and 2,000,000 passengers and 253,000 tons of freight were carried in that fiscal year. On the first of April, 1909, there were 30,983 miles of open line which carried during the year 330,000,000 passengers and 64,000,000 tons of freight. The average rate per mile for passengers was .416 cents gold and about less than one cent gold per ton per mile for freight. There are now employed about 525,000 persons in railway work, and of this number 508,000 are Indians.

REPORT OF CHINESE BOARD OF COMMUNICATIONS.—The annual report submitted by the Board contains the information that there are 8,000 li or 2,700 miles of railway lines open in the Empire and about 60,000 li or 20,000 miles of telegraph lines in operation.

INDIAN RAILWAY SUPPLIES.—According to *Railways* the North British Locomotive Company, Limited, Glasgow, have the contract of the Burma Railways Company for the supply of four Mallet locomotive engines with tenders together with one set of spare wheels and axles. The Cargo Flat Iron Company, Limited, have, we hear, a large order in hand for the supply of bull-headed steel rails and also flat-footed steel rails, of different sections, to the East Indian Railway. Messrs. Dorman, Long and Company, Limited, Middlesborough, also have a large contract from this Railway for the supply of bull-headed steel rails and steel fishplates and flat-footed steel rails with steel fishplates. Messrs. Beyer, Peacock and Company, Limited, Manchester, and the North British Locomotive Company, Limited, are supplying spare or duplicate parts for Metre Gauge Rack Locomotives to the South Indian Railway for use on the Nilgiri Mountain Railway. Messrs. Burn and Company, Limited, have the order of the East Indian Railway for the supply of the iron and steel work for 20 built-up columns, joist beams, complete, girders, and bulb T. bar rafters for the second floor of the south flank of the south block of these buildings. The Patent Shaft and Axletree Company, Limited, are supplying four locomotive engine turntables to the Bengal-Nagpur Railway. Messrs. Stothert and Pitt, Limited, Victoria Street, London, S.W., who have their workshops at Bath, have in hand the manufacture of a steam travelling crane for the same Railway. Messrs. Elliott's Metal Company, Limited, have, we hear, supplied a large number of brass boiler tubes for locomotives to the Bengal-Nagpur Railway. Messrs. J. Levick, Limited, have in hand a very large order for the supply of their well-known carriage fittings to the same Railway. Messrs. Burn and Company, Limited, are supplying the Oudh and Rohilkhad Railway with three Engine Hoists complete with winch overhead pulley and sheave blocks; and are erecting for the Eastern Bengal State and East Indian Railway Companies a waiting-shed each, the former at Diamond Harbour and latter at Serampore station. For Burma, they are supplying 120 iron shutters for the Mon Canal Works; two barges each 60 feet by 20 feet by 5 feet for the Public Works Department, Rangoon; a pontoon swing bridge, and Jetty for Bassein and ironwork for another jetty at Rangoon. In addition to the above, they are supplying steelwork for a suspension bridge at Ootacamund; a dozen corrugated iron roofs for buildings in Calcutta and elsewhere and a large quantity of columns, baseplates, etc., for a local jute mill. The Railway Board have sanctioned the transmission by the South Indian Railway of an indent to England for bridge girders required for renewals on the Salem-Calicut section and Pedanar-Mettupulaiyam branch.

FORMOSAN RAILWAY NEWS.—Consul Reat of Tamsui reports that the net profit of the Formosan Railway for a little over a year's operation amounted to $653,695 gold and the following statistics are offered by the railway department: Total mileage 271.3; value of rolling stock, $1,319,670, consisting of 54 engines, of which eight are American made, 112 carriages and 826 wagons. Revenue: Passengers, $615,119; freight, $755,867; miscellaneous receipts, $4,424; total revenue, $1,375,410. Expenditures, $721,715; excess of revenue, $653,695. The number of passengers carried during the year was 2,691,033, and the freight carried amounted to 710,460 tons. Persons employed on the line, 2,756; salaries and wages paid during the year, $281,840. Two extensions of 60 and 41 miles respectively have been proposed in the Eastern and Southern parts of the islands.

TIENTSIN-PUKOW RAILWAY.—There is prospect according to the native press that the Northern Division of this line will be completed to the Whangho by the end of the present year. Up to the Chinese New Year 150 miles were reported complete connecting Tientsin and Techow.

RUSSIA-JAPAN THROUGH TRAFFIC AGREEMENT.—The following statement has been given out by the Imperial Railway Board of Japan:

"As regards the International Through Passenger Traffic, Japan will open it shortly with Russia and in the natural course of events which will not take long to wait for, also with Germany, France and England. Needless to say that this will bring a boon to the travelling public at large.

"But what is of far greater importance would be the establishment of a system of Through Goods Traffic. On a glance at foreign trade returns of Japan, the fact will stand out conspicuously that, next to the United States and China, England stands highest in the volume of trade and is followed in order by Germany, France, Russia and others. The future of Russia-Japan commerce is indeed assuming a brighter aspect, but the absence of facilities for Through Goods Traffic has so far confined the international trade within the bounds of Eastern Siberia only. For communication with European Russia, the roundabout way via France or England has had to be adopted, which route takes 40-50 days for goods to cover, whilst the shortest cut via the Siberian Railway would give a saving of 35-30 days each way, that is to say, would require only 14-15 days."

PHILIPPINE RAILWAY FOUNDRY.—This company has established a foundry at their headquarters, Iloilo, and on the day of the opening this month turned out three tons of castings. The plant has a capacity of five tons a day.

THE KIANGSU RAILWAY.—A report from Hankow is to the effect that a general meeting of the shareholders was held recently and it was decided to invest Tls. 580,000 and to raise a domestic loan of Tls. 2,000,000 to carry the construction to completion.

TIEHLING-HAILUNCHEN PROJECT.—The Chinese Chamber of Commerce at Tiehling has approached Peking through the offices of the Viceroy with a view to receiving imperial sanction to the construction of a line connecting these two points and practically parallel with the Kilin-Chanchun line. It is understood that Peking has dispatched an engineer to make an investigation and report on the feasibility of the project.

JOHORE RAILWAY DAMAGED.—Over 60 miles of this line suffered severe damage from the heavy floods that visited that section during February and traffic was practically suspended. In some places the entire embankment was washed away and entire reconstruction made necessary in some sections. The cost of repairing the line which is about 120 miles in length has not been definitely estimated but will take months to accomplish.

CANTON-HANKOW EQUIPMENT.—Consul Pontius of Swatow gives the following on the equipment of this line:

"With regard to the rolling stock, six American locomotives are already in operation and

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bank of approved standing in Manila. The bidder to whom the contract is awarded will be required to give bond. Blanks and full information furnished on application to this office or to the nearest United States consul. Envelopes containing proposals must be marked: "Proposals for frozen fresh beef and mutton for fiscal year 1911, to be opened April 5, 1910," and addressed to the undersigned.—D. L. BRAINARD, Lieut. Col., D. C. G., U. S. Army, Chief Commissary.

PROPOSALS INVITED.—Bangkok Sanitary Department.—5,445 tons of cast-iron water pipes and accessories opened April 15, 1910.

PROPOSALS FOR COAL.—Headquarters Philippines Division, Office of Chief Quartermaster, Manila, December 13th, 1909. Sealed proposals, in triplicate, subject to usual conditions for furnishing approximately 65,000 tons of coal to the Quartermaster Department, U. S. Army, during the Fiscal Year 1911, will be received here until 10:00 a. m. May 16th, 1910, and then opened. Information and blank forms furnished on application. F. G. Hodgson, Deputy Quartermaster General, U. S. A., Chief Quartermaster.

16 are in stock. They are six Moguls of 102 tons, the cylinders of which are 19 by 26 inches, the coal capacity 9 tons, and the water 5,000 gallons. There are four Manhattan locomotives being used in construction work; these engines were formerly in service on the elevated railways in New York City. There are also six double-tender tank engines of 50 tons, which are engaged in running the freight and passenger trains to railhead.

"The Mogul engines have just appeared on the road, and they will certainly inspire the Chinese of the interior when they go out for duty. The foreign engineer in charge and his men are proud of the fact that they have got these big engines together in 11 days from the unpacking of the first case.

"Of coaches and freight cars there are 30 American-type passenger coaches, one directors' car, 72 American freight cars, and 106 China-made freight cars. At the works at Wongsha three first-class compartment coaches are now being built, as well as three second-class coaches, and four third-class coaches, the steel underframes having been set out from America.

"In the future much of the superstructure of cars will be built by the Chinese themselves, and a change is to be made with regard to bridge construction. Whereas the practice has been to import the bridge from England or America all ready for erection, future bridges will be made from material imported in the rough. The mechanical department at the head station at Wongsha, which is exceedingly well equipped, the latest machines having been imported from Great Britain and America, is capable of turning out all manner of work. At present the machines are in temporary sheds, but permanent shops will shortly be erected."

KIRIN RAILWAY PROTEST.—The Chinese gentry recently held responsible for the anti-Japanese boycott in Manchuria have filed a protest against the joint construction and control of the Kirin-Chin-tao Railway by Japan and China under the recent agreement. It is believed, however, that the differences will be amicably adjusted.

BAGUIO SPECIAL SERVICE.—The Manila Railway Company has arranged a special service to Baguio on Tuesdays, Thursdays and Saturdays, the trip to Camp One being made in 7 hours and 20 minutes. The round trip to Baguio good for six months including automobile service is ₱30.90 for the season.

ANTUNG-MUKDEN RAILWAY CONSTRUCTION.—The latest advices from this important construction are to the effect that great difficulty is experienced in boring the Funchinling tunnel 4,880 feet long, the longest on the line. At about 370 feet from either end the hardest kind of rock was encountered and the progress has been slow. However, the contractors believe they will finish the work at least five months previous to the date of the contract. About 200 men are employed on this particular work.

THE SHANTUNG RAILWAY.—The service on this railway is constantly being improved and there has been a marked response in increased traffic. Last year the rolling stock was increased by two locomotives, several baggage cars, twenty coal cars and ten covered freight cars besides a few tank cars. Tsingtau and Tsinanfu have had the benefit of a fast train daily since last October. Among the improvements along the line is the building of a number of good hotels which has greatly encouraged passenger traffic.

OBITUARY

The death of Mr. Kinneth D. Tweedle of the engineering staff of Messrs. Jardine, Matheson & Co. was reported from Peking the latter part of last month. The deceased was prominent in engineering circles. Since 1905 until about six months ago, he was assistant locomotive superintendent of the Shanghai-Nanking Railway when he accepted a position with Messrs. Jardine, Matheson & Co. at Peking.

FAR EASTERN ENGINEERING, CONSTRUCTION, COMMERCIAL AND FINANCIAL NEWS

ELECTRIC RAILWAYS, POWER, LIGHT, TELEGRAPH, TELEPHONES, AIRSHIPS, ETC.

NIKKO ELECTRIC RAILWAY.—Some difficulty is reported in connection with the construction of the railway connecting Nikko and the Ashio mines, which is expected completed by the end of April. This line was proposed for the purpose of securing the passenger traffic from the Ashio Copper Mines and the Refining Works of Kiyotaki. Heretofore the traffic in passenger and freight was carried by jinrikshas and bullcarts and these interests are engaged in a campaign to force the railway to abandon the construction.

THE PAOSHAN TELEPHONE EXTENSION.—Peking has made objection to the extension by the Shanghai Mutual Telephone Company of its lines into the Chinese district, without, it is claimed, securing the permission of the Chinese authorities.

SHANGHAI-HANGCHOW TELEGRAPHS.—Permission has been granted by the Peking Government for the installation of a direct telegraph line connecting these two points. Heretofore, messages were sent via Swatow.

THE KINUGAWA HYDRO-ELECTRIC PROJECT.—A report from London is to the effect that capital to the extent of yen 20,000,000 has been interested upon the representations of Mr. Jackson. The capitalists will now send representatives to investigate the venture and if the result is satisfactory the development of this plant is practically assured.

WIRELESS FOR THE PHILIPPINES.—A committee comprising representatives, each from the military service, naval service and Insular Government, will soon meet to conclude arrangements for the installation of a complete wireless service throughout the Philippine Islands.

ALL RED WIRELESS.—The recommendations of the British wireless conference with regard to installations connecting up her possessions in the Southern Pacific and Australasia would entail an expenditure of approximately £75,000 and a yearly outlay of £25,000. This would include high power stations at Sydney, Doubtless Bay, Suava in Fiji and Ocean Island, with medium power stations at Tulagi, Solomon Islands, and at Vila, New Hebrides.

PRIVATE WIRELESS AT MANILA.—W. E. Sherman, stevedore, has arranged for the installation of a wireless plant at his home in Manila which is situated on Santa Mesa heights. His purpose is to keep in touch with the liners carrying wireless apparatus making Manila a port of call.

ELECTRIC OMNIBUSES IN SOURABAYA.—The municipality has begun the installation of an electric lighting and power plant and it is proposed to operate a system of electric omnibuses from overhead wires.

WIRELESS IN SIAM.—The representatives of the United Wireless Telegraph Company of New York have been negotiating with the Siamese Government with a view to installing ten stations there. The Marconi Company is also interested. The United Wireless offered to make the installation for Ticals 80,000.

ELECTRIC LIGHT PLANT FOR CHANGCHUN.—Consul Cloud of Mukden has reported that an American Company is negotiating for a concession to instal an electric plant at this point to cost approximately Tls. 125,000.

SEARCHLIGHT INSTALLATION AT CORREGIDOR.—An appropriation of $139,200 gold has been asked for to pay the cost of installation of ten large searchlights on the fortifications at the entrance to Manila Bay and Subig. Of these lights the largest will be about 60 inches.

SIAMESE AND TELEGRAPH WIRE.—The disposition of the Siamese natives in outlying districts to utilize pieces cut from the telegraph wires for repairing bullock carts, plows, etc., makes the service very irregular, says the *Siam Press*.

CHINESE POST AND TELEGRAPH SCHOOLS.—The Peking Government has decided to open schools at an early date for the training of operators under Chinese management.

PUBLIC WORKS, DOCKS, WHARVES, ETC.

WHANGPOO CONSERVANCY REPORT.—The statements of receipts and expenditures submitted to the Shanghai General Chamber of Commerce show that up to December 31st, 1909, the total expended amounted to Tls. 4,416,337.10. Besides this amount the Conservancy Board is pledged for the following amounts:

	Sh. Taels.
(1) Unpaid balance of old dredging contract	875,000.00
(2) Unpaid balance of the Fort Jetty contract	529,416.00
(3) Amount of the recently signed dredging contract	264,000.00
(4) Principal of 4½ million loan	4,500,000.00
(5) Balance of interest on the 4½ million loan	3,274,409.74

TANJONG PAGAR WHARVES.—The first portion of the reconstructed wharves formerly known as the Borneo Wharf has been opened. It will be known as the West Wharf.

SOME JAPANESE PUBLIC WORKS.—The following projects were considered by the diet in connection with budget:

	Yen
The car-ferry at Shimonoseki (1910 to 1915)	12,000,000
The Kobe breakwater (1910 to 1914)	2,870,000
The Kure torpedo experimental station (transfer) (1910 to 1911)	214,300
Big gun range at Kopho (1910 to 1911)	280,385
Works in Chinhai Bay (1910 to 1919)	8,135,159
Contrivances for cooling powder chambers on board ship (1910 to 1911)	3,500.000
Raising of the *Matsushima* (1910 to 1913)	170,000

Besides the above is the expenditure of over yen 8,000,000 in the establishment of a new naval port in Chinghai Bay, Korea, and two military stations one at Port Lazaroff for barracks and a gun range at Kopho. The appropriation is spread over ten years.

CHINESE GOVERNMENT PAPER MILL.—The construction of the Government Paper Mill at Hankow is under way and will be completed at the end of the year. All kinds of paper, including paper for bank notes, will be manufactured here.

CEMENT TESTS

Made according to the latest British Standard Specification, or to any other, as required : : : :

COAL TESTS

Ordinary tests. Caloriphic value. Elementary analysis

MINING INSTITUTE AND ANALYTICAL LABORATORY

Dr. LIVIO SILVA

China, Manchuria, Japan, Indo-China, Siam, Straits Settlements, Malay States, Burma, India, Malaysia, and the Philippines

THE FAR EASTERN REVIEW

VOL. VI.—No. 11. MANILA, SHANGHAI AND YOKOHAMA, APRIL, 1910.

50 Centavos Philippine Currency
25 Cents, U. S. C.

His Excellency, CHANG JEN-CHUN
VICEROY OF THE LIANG KIANG
(PROVINCES OF KIANGSU, KIANGSI AND ANHUI)

The Waiwupu, China's Foreign Office

The Chinchow-Aigun Railway

The Nanyang Exposition

China's Merchant Marine

The American Group

The New American Minister to China

ENGINEERING
COMMERCE ❧ FINANCE

giving the Australian continent a trans-continental line. The cost of this survey was £20,000 voted by the Federal Government. A correspondent of the *Mining Journal* gives an interesting description of the survey and of the country through which the line will pass. For purposes of survey the gauge of the proposed railway was assumed to be 4 ft. 8.5 inches, the grade one in 80 and a minimum curvature of 20 chains radius. In Western Australia the 462 miles of line were surveyed in 85 days and the end from Port Augusta to Tarcoola in South Australia, a distance of 601 miles, was completed in 292 days. Scarcity of water greatly impeded the work. Much fertile country was crossed; granite and limestone prevailed along the route in many places with table land of sand stone formation and many valleys with good soil and vegetation. Better rainfall would make many of these valleys very productive. It is proposed to establish a daily passenger train, and a freight train from each terminus every other day under present plans. The following estimate of cost is reproduced from the *Journal*:

Estimate of Cost of 1,063 miles of line with a 4-ft. 8.5-in. gauge.

	£
Clearing	16,000
Fencing	8,000
Earthworks	355,000
Bridges and culverts	65,000
Rails and fastenings	1,005,000
Sleepers and ballast	1,019,000
Platelaying	117,000
Water supply	609,000
Station yards (telegraphs, terminal accommodation, shops, and machinery)	335,000
Maintenance for twelve months	63,000
Rolling stock	291,000
Land purchase	5,000
Engineering and supervision	100,000
Total	£3,988,000

STEEL CONTRACT FOR THE SOUTH MANCHURIA RAILWAY.—Messrs. Dorman, Long & Co., Ltd., Middlesborough, Eng., have secured the contract for the supply of 6,000 tons of steel work for the construction of bridges where the South Manchuria Railway is doubling its line from Dairen to Suchiatun. There will be approximately 400 spans ranging from seven to 105 feet in length.

TOKYO-YOKOHAMA RAILWAY.—The Railway Board is considering the advisability of reducing the time of transit on this line from 28 minutes to 18 minutes. It is understood that the Board will add a standard gauge track to the present narrow gauge in order to accomplish this. This means the widening of bridges and roadbed to accommodate the two tracks and the two classes of rolling stock. The decision on the part of the Board would indicate that it is the beginning of a program to include the general widening of the railway gauge to standard under Government control.

KOREAN RAILWAY PROGRAM.—The Diet has approved the construction and operation of a line running across the peninsula from Pyongyang to Gensan, a line from Gensan along the coast to Chyongjin to connect with the Hoiryong road. The balance of the program as recently outlined in the REVIEW is now under consideration. The total Japanese investment in Korean Railways up to this time exceeds yen 75,000,000.

THE KILIN-CHANGCHUN RAILWAY.—The survey of this line was expected completed last month and active work of construction should be under way by this time. In accordance with the terms of agreement which provide that the Chief Engineer and Chief Accountant should be Japanese, it is learned that Mr. Magao has been named for the former position and Mr. Uchigaki of the Mitsui Company to the latter position.

Director Pu is soon to advertise for tenders for the supply of rails. The construction of the roadbed will be let as soon as the route is decided upon. It will be remembered that the Chinese capitalists who proposed to build this line without Japanese assistance ordered about Tls. 500,000 worth of material and now negotiations are under way to have the company take it off their hands. There will be one tunnel approximately 1950 feet in length at Tamen Pass which will take almost two years to bore. A number of large bridges will have to be built, one across the Shih-ma, 470 feet in length, and another across the Itung, 470 feet long. It is expected that the estimates will be submitted this month and construction make some progress.

BRITISH SECTION OF THE KOWLOON-CANTON RAILWAY.—The announcement was made last month by Sir Frederick Lugard, Governor of Hongkong, that the line up to date has cost $4,800,000 in excess of the original estimates. At a meeting of the Legislative Council of Hongkong early this month the sum of $2,100,000 was voted for the construction of the railway for the year 1910. This vote is $300,000 over the published estimates, but was explained necessary on account of the increased expenditure in construction of earthwork and tunnels and permanent way.

The progress of the railway as stated in the report indicated that the British Section will not be opened until July on account of the delay in securing rolling stock and it will be Decembe: before the line is completed. The total estimates to date amount to $12,371,495.

PROPOSED IPOH-TRONOH RAILWAY.—Replying to a petition from Ipoh requesting the construction of a railway connecting Ipoh and Lamut via Tronoh, the High Commissioner stated that while he was always ready to extend railway facilities to populous districts, he pointed out that the Kinta District was now served with railway accommodation to Prai and Telok Anson and that the proposed line would serve to deviate at least two-thirds of the traffic from the latter point and would create little additional traffic. This at a cost of two million to build the line and an indefinite amount to bridge the Perak river with the only outcome of reducing the average receipts of the Railway Department and increasing the aggregate railway expenses impressed the High Commissioner that the petition had no virtue to warrant the sacrifice.

THE PEKING-JOHOL RAILWAY.—Advices from Peking are to the effect that the Board of Posts and Communications had decided to postpone the construction of the line to Johol and the one from Chinwangtao to Kuyungkwan for the present and will devote attention particularly to the early completion of the Kalgan-Kobdo line.

ADDITIONAL LOCOMOTIVES AND ROLLING STOCK FOR INDIAN RAILWAYS.—During the quarter ended December 31st, 1909, according to *Railways*, the broad gauge railways erected 73 locomotives, 122 carriages and 1,252 goods vehicles. The metre gauge railways had added 5 locomotives, 60 carriages and 312 good vehicles; and the narrow 2 feet 6-inch gauge railways had erected 12 locomotives, 16 carriages and 55 goods vehicles in the same period. The North-Western State Railway, who work the Kalka-Simla, are arranging for the provision of four additional bogie carriages to meet the increased traffic and demand for new stock. These four carriages are to be of a composite type, combinipg a first class compartment with a luggage compartment and brakevan.

THE ANDERSON FOUNDRY COMPANY, LIMITED.—The well-known manufacturers of fencing materials, etc., have in hand a large order for the supply of points and crossings for permanent way to the Bengal-Nagpur Railway. Messrs. William Beardmore and Company, Limited, Parkhead Forge Rolling Mills and Steel Works, Glasgow, are supplying the same railway with 124 pairs of wheels and steel axles for rolling-stock; and Messrs Cammel, Laird and Company, Victoria Street, London, 250 steel tyres at their Cyclops Steel and Iron Works, Sheffield. Messrs. H. Pooley and Son, Limited, the well-known old English manufacturers of weighing machines, are constructing a 70-ton weigh-bridge for the Bengal-Nagpur Railway, which will probably be shipped to Calcutta next month (March 1910). The Indian Railway Board has sanctioned the following estimates for the year 1910-11:

Five tenders for locomotives for the meter gauge section of the South Indian Railway.

A revised design for combined metre gauge goods brake vans and horse boxes for adoption on the South Indian Railway.

A new design for 2′ 6″ gauge four-wheeled open goods wagons required for His Highness the Gaekwar of Baroda's Dabhoi Railway.

The provision in 1910-1911 of two new broad gauge locomotive engines standard gauge type to replace two old engines on the Oudh and Rohilkhand Railway.

The provision of four additional bogie carriages (composite first-class and luggage and brake van combined) for the Kalka-Simla Railway.

The provision of eighteen additional bogie coaching vehicles required for working the Coonoor-Ootacamund extension of the Nilgiri Railway.

The renewal of a large number of vehicles on the metre gauge section of the Madras and Southern Mahratta Railway during the year 1910.

The provision of fourteen additional bogie composite first and second class carriages required for the North-Western State Railway.

The replacement on the East Indian Railway during the year 1910 of twenty-three old tank locomotive engines and fifteen old locomotive tenders by twenty-three new locomotive tank engines.

The provision of sixty-four wheeled fruit vans on the North-Western State Railway in lieu of thirty bogie fruit vans which were previously authorized.

The provision of twenty wagons required for the use of the East Indian Railway Stores Department.

The provision of two 10-ton travelling cranes with two support wagons for the Madras and Southern Mahratta Railway.

The provision of three additional covered carriage trucks for use on the North-Western State Railway.

The provision of fifty more iron covered goods wagons for the Oudh and Rohilkhand State Railway making a total of 200 such wagons which are to be constructed in India.

The provision of fifty open low-sided wagons on the North-Western State Railway which are required for working the Sutlej Valley Railway.

The provision of ten additional oil tank wagons required for the bulk oil traffic on the North Western Railway.

The conversion of 120 high sided goods wagons on the Oudh and Rohilkhand State Railway into covered wagons in order to make them suitable for general traffic.

THE SIAM ROYAL RAILWAYS.—There are now 320 kilometers of earthwork under construction on the Royal Southern Railway says the *Bangkok Times*:—Work at Singora has been delayed about a month owing to the exceptional rainfall. At Trang and south from Petchaburi no trouble has been experienced through the abnormal weather.

The abutments of the bridge crossing the Petchaburi river are finished, and the first consignment of rails is on board the E. A. Co.'s *Pangan*, due in Bangkok within a few days. The *Pangan* also discharged one thousand tons of rails for Trang at Penang and the remainder, three hundred and fifty tons, come on to Bangkok and are intended for Petchaburi. Consignments of rails will in future be brought out by the East Asiatic Co.'s monthly boats, some going to Singora and Candon. The erection of the screw pile wharves in the inner harbor at Singora and in the river at Trang are proceeding satisfactorily.

Surveying work is also going on steadily, Nai Chin Suriwongse is surveying between Cha Ahm and Koh Lak, and Mr. Forsyth Martin is at work from Tung Song south to Patalung. Phra Ramphai will take charge of the construction of the Singora branch line next month.

Mr. Ammon, formerly on the Northern Line, returns to Bangkok this month and will join

RFL 10713

China, Manchuria, Japan, Indo-China, Siam, Straits Settlements, Malay States, Burma, India, Malaysia, and the Philippines

THE FAR EASTERN REVIEW

VOL. VI.—No. 12. MANILA, SHANGHAI AND YOKOHAMA, MAY, 1910. 50 Centavos Philippine Currency 25 Cents, U. S. C.

FROM RIGHT TO LEFT:—HIS EXCELLENCY THE HON. W. CAMERON FORBES, GOVERNOR GENERAL PHILIPPINE ISLANDS; HORACE L. HIGGINS, ESQ., GENERAL MANAGER MANILA RAILWAY CO.; AND SIR CLIFTON ROBINSON.

REVIEW OF PHILIPPINE RAILWAYS

The North Britisher in the Far East

Electrical Installation at Mukden

FROM LEFT TO RIGHT:—DIVISION ENGINEER WADE (DECEASED), MANILA RAILWAY CO.; HORACE L. HIGGINS, ESQ., GENERAL MANAGER, MANILA RAILWAY COMPANY; WILLIAM B. POLAND, ESQ., VICE-PRESIDENT PHILIPPINE RAILWAY CO.; AND LOOMIS F. GOODALE, ESQ., SUPERVISING RAILWAY EXPERT FOR THE PHILIPPINE ISLANDS

ENGINEERING COMMERCE FINANCE

The "North Britisher" in the Far East

The Locomotive Engineer in the Far East has long been well acquainted with the productions of the North British Locomotive Company, Limited,—the Glasgow firm in which have been merged the interests of Messrs. Neilson, Reid & Co., Messrs. Dubs & Co., and Messrs. Sharp, Stewart & Co., names all of good repute for sound British design, material and workmanship.

It is with pleasure that we herewith give some little account of their doings in these regions, and we hope in the near future to be enabled to supplement it by what will be of equal interest, viz: some notes on their "up-to-date" work for, amongst others, the great Railway systems of the Argentine, Brazil, Chili and Peru, and for the Railways of the British Colonies and India.

In the Far East the North British Locomotive Company's connection with *Japan* was initiated in 1871, when Messrs. Dubs & Co. and Messrs. Sharp, Stewart & Co. delivered the first locomotives to arrive in that country, and this connection has been maintained until up to the present time upwards of 600 Engines constructed by them are now on Japanese soil.

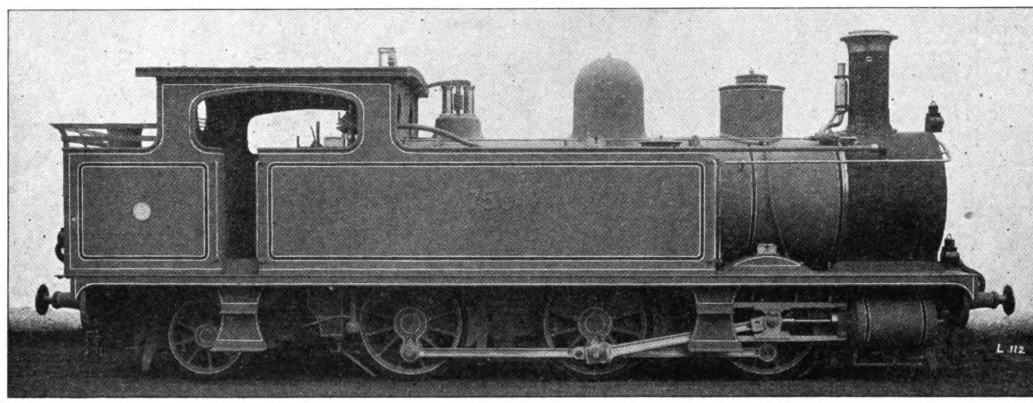
The various types supplied would alone give material for an interesting article, but we restrict ourselves meanwhile to Photographs Nos. L.112 and L.285, illustrating two types of Engines that have been delivered recently, the former being the standard "mixed traffic" Tank Engine, and the latter a Passenger Engine with Tender.

In *CHINA* the firm's connection dates back to 1887, when the pioneer locomotives "Speedy Peace" and "Flying Victory"—tiny machines with cylinders 5″ diameter and weighing each only about 5 tons—were sent into that Empire, to meet, however, with an untimely fate. The commercial entry came in the same year with the locomotives for working the coal mines in Tongshan under Mr. Kinder's supervision. Since that date they have supplied the greater number of the Engines for the *Imperial Railways of North China*, and two types, Photos. 4355 and L.199, are herewith illustrated, the former being the 17″ "Mogul" type, and the latter the 18″ "Passenger" type. The Tenders, which are not shown on the photos, are of the double bogie type, and carry 3,200 gallons of water and 3½ tons of coal.

The latest type of Engine sent out for the *Imperial Railways* is the "Mallet" for the recently opened *Kalgan* route, and these powerful Engines, four of which have been supplied, are shown on Photo. No. L.274. This, it may be explained, is not a new type of Engine, but one which has stood the test of long service on many of the European Railways. It has attained, however, in recent years, considerable notoriety through its adoption in the United States, and the successful results obtained there. The Engine is really a double-engine with one boiler, and on long grades it has the merit of doing away with the "double heading" of trains, an important feature on the Kalgan Railway where a grade of 1 in 30, 12 miles long, has to be surmounted. As will be seen from the illustration, the forward engine with its six coupled wheels is arranged on a bogie, thus giving the necessary flexibility to the wheel base for the passage of the curves.

The hind engine with its six coupled wheels is arranged on the main frame which as in usual practice also carries the Boiler, Cab, etc. It has also to be noted that the Engine isa "Compound" the forward cylinders being low pressure and the hind high pressure, the Tender which is not shown on the photo, is of the double bogie type and carries 3,200 gallons of water and 3½ tons of coal.

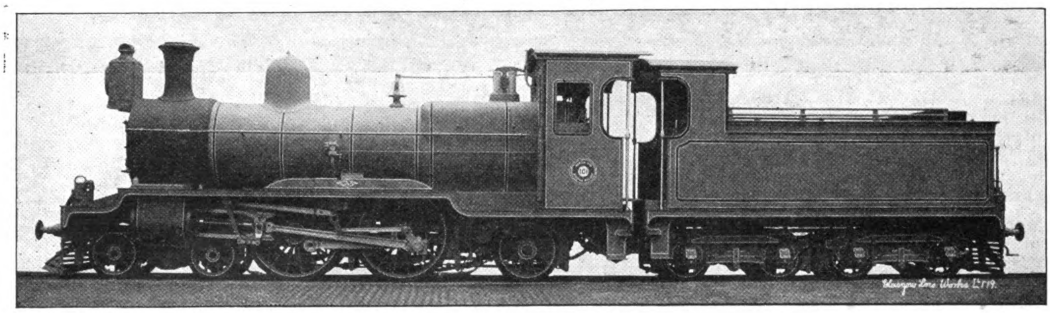
For the *Canton-Kowloon Railway* and for the *Tientsin-Pukow Railway*, locomotives of the *Mogul* type, as illustrated above for the North China Railway, but of a more powerful class,



Reference No. L 112

GAUGE 3′ 6″—**IMP. RAILWAYS OF JAPAN**

Diam. of Cylinder	16″.—Stroke, 24″
Heating Surface, in Tubes	906.2 Sq. Ft.
Heating Surface, in Firebox	93.6 Sq. Ft.
Total	999.8 Sq. Ft.
Area of Firegrate	14.4 Sq. Ft.
Working Pressure	160 Lbs. Per. Sq. In.
Diam. of Wheels	4′.1″ and 3′.2″
Axles and Tyres of Steel.—Firebox of Copper.	
Boiler fed by 1 No. 7 and 1 No. 8 Injector.—Tubes of Brass.	
Capacity of Tanks	1716 Galls.
Fuel Space	76 Cub. Ft.
Coupled Wheel Base	12′.6″
Total, Wheel Base	19′.9″
Weight, Empty	37 Tons. 6 Cwts.
Weight, Full	49 Tons, 10 Cwts



Reference No.L 179

GAUGE OF RAILWAY, 3-ft. 6-in.

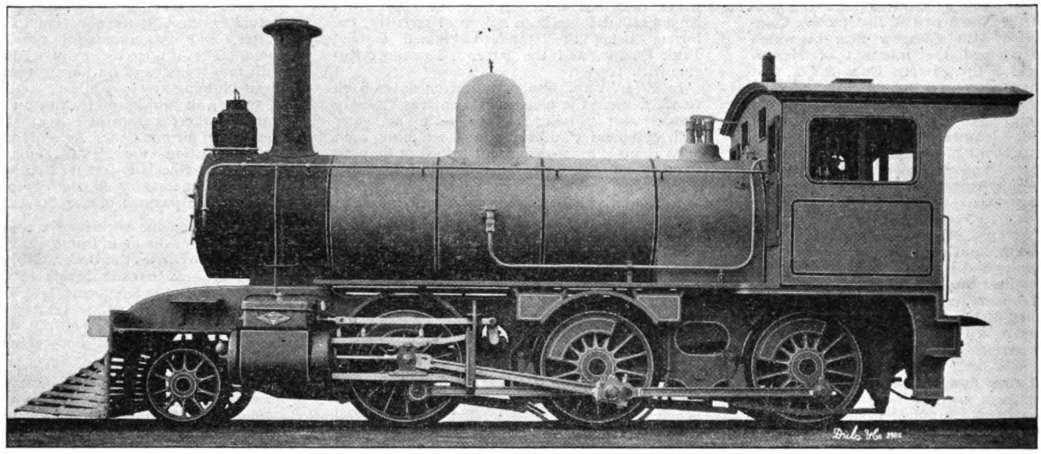
Type, 4-4-2.—**ENGINE**

CYLINDERS	Diameter	16-in.
	Stroke	24-in.
WHEELS	Coupled, Diameter	5-ft 0-in.
	Front, Diameter	2-ft. 7½-in.
	Hind, Diameter	3-ft. 4½-in.
WHEELBASE	Rigid	12-ft. 0-in.
	Total	21-ft. 2-in.
	Engine & Tender	43-ft. 6¼-in.
WORKING PRESSURE		180-lbs. per sq. in.
HEATING SURFACE	Tubes	973 sq. ft.
	Firebox	107 sq. ft.
	Total	1.080 sq. ft.
FIREGRATE AREA		16.5 sq. ft.
BOILER FEED		2 Injectors & 1 Pump.
TRACTIVE FORCE at 75% of Boiler Pressure		13.824-lbs.
WEIGHT	In Working Order	40 tons 16 cwts.
	On Coupled Wheels	21 tons 6 cwts.

TENDER

TANK Capacity	2,500 gallons.	FUEL Space	180 cub. ft.	WEIGHT, Full	32 tons 6 cwts.

NORTH BRITISH LOCOMOTIVES



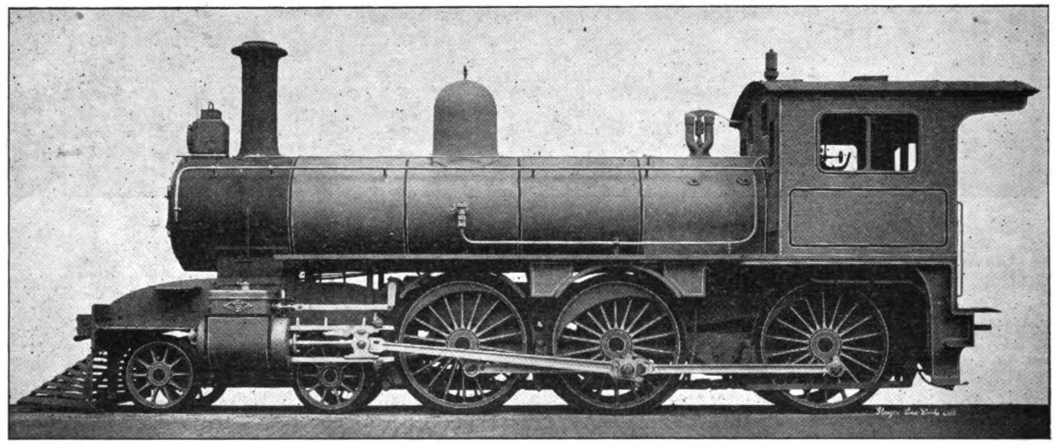
Reference No. 4355.

GAUGE OF RAILWAY, 4-ft. 8½-in.
TYPE, 2-6-0.—**ENGINE**

CYLINDERS	Diameter	17-in.	
	Stroke	24-in.	
WHEELS	Coupled, Diameter	4-ft. 6 in.	
	Front, Diameter	3-ft 0-in.	
WHEELBASE	Rigid	14-ft. 3-in.	
	Total	21-ft. 11-in.	
	Engine & Tender	-ft. -in.	
WORKING PRESSURE		180-lbs. per sq. in.	
HEATING SURFACE	Tubes	1,110 sq. ft	
	Firebox	103 sq. ft.	
	Total	1,213 sq. ft.	
FIREGRATE AREA		20.2 sq. ft.	
BOILER FEED		2 Injectors.	
TRACTIVE FORCE at 75% of Boiler Pressure		17,340-lbs.	
WEIGHT	In Working Order	46 tons	6 cwts.
	On Coupled Wheels	39 tons	2 cwts.

TENDER

TANK Capacity	gallons.	FUEL Space	cub. ft.	WEIGHT, Full	tons cwts.



Reference No. L 199.

GAUGE OF RAILWAY, 4-ft. 8½-in.
TYPE, 4-6-0.—**ENGINE**

CYLINDERS	Diameter	18-in.	
	Stroke	24-in.	
WHEELS	Coupled, Diameter	5-ft. 6-in.	
	Front	3-ft. 0-in.	
WHEELBASE	Rigid	14-ft. 2-in.	
	Total	25-ft. 11-in.	
	Engine & Tender	-ft. -in.	
WORKING PRESSURE		180-lbs. per sq. in.	
HEATING SURFACE	Tubes	1,298 sq. ft.	
	Firebox	109 sq. ft.	
	Total	1.407 sq. ft.	
FIREGRATE AREA		22.2 sq. ft	
BOILER FEED		2 Injectors.	
TRACTIVE FORCE at 75% of Boiler Pressure		15,905-lbs.	
WEIGHT	In Working Order	52 tons 11 cwts.	
	On Coupled Wheels	37 tons 19 cwts.	

TENDER

TANK Capacity	gallons.	FUEL Space	cub. ft.	WEIGHT, Full	tons cwts.

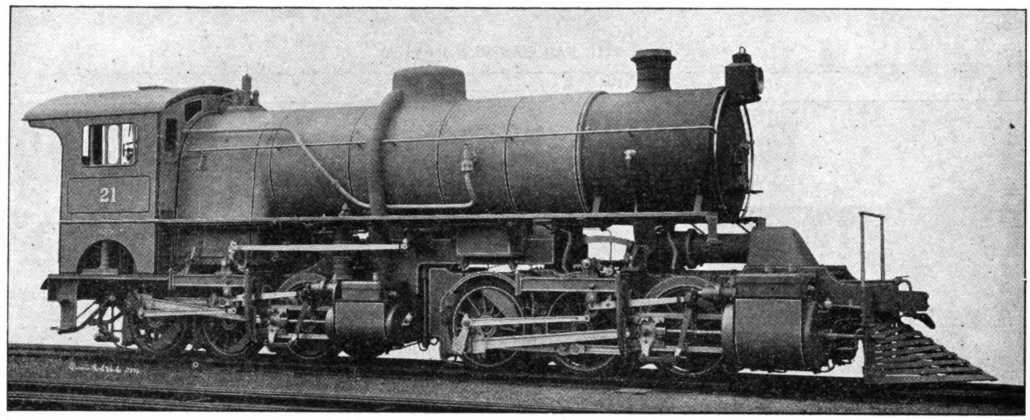
the cylinders being 19″ diameter, are presentyl under construction.

The *Shanghai-Nanking Railway* locomotives built by this Company are illustrated by photos Nos. L.101, L.102, and L.232, and form a handsome set of Goods, Mixed Traffic, Tanks and Passenger Engines respectively.

In the *Philippines* the first consignments of Locomotives from Messrs. Neilson, Reid & Co. and Messrs. Dubs & Co. were delivered to the Manila and Dagupan Railway (now the Manila Railroad Company) in 1890, and concerning these Engines it is worthy to note that after eighteen years' experience of them only a few (modern) improvements were required in twenty new Engines of the same type recently delivered by the North British Locomotive Company.

Engines of the "Atlantic" type have also been supplied to this Road for Express Passenger service, and this type, which is quite an unusual one on the 3′ 6″ gauge, is illustrated by photo, No. L.179. Five Heavy Tank Engines for Mixed Traffic work, in which the boiler and most of the principal working parts are duplicate with the corresponding parts of the Atlantics, are presently being delivered by the North British Locomotive Company.

Did we propose to dwell further on the work of this firm, reference might be made to the fact of their having delivered locomotives in the Straits Settlements, Siam, and elsewhere in the East. In closing, however, it may be sufficient to say that one of the objects which the North British Locomotive Company has constantly held before them has been to satisfy at all times their various clients who from time to time submit to their enquiries regarding special work, believing, as they do, that their extensive and varied experience can be utilized to the full in this way. The interests of the Company and of their Clients, so far as regards the East, are carefully safeguarded and watched by their Agents, Messrs. Jardine, Matheson & Co. Ltd., Shanghai, and Messrs. Okura & Company, Tokio



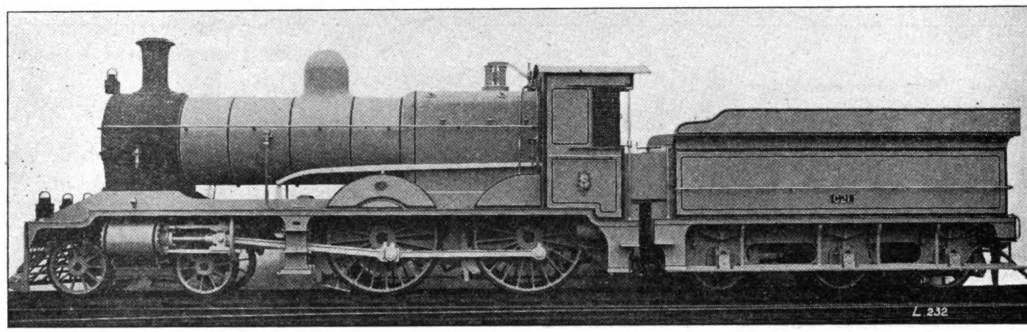
Reference No. L 274

GAUGE OF RAILWAY, 4-ft. 8½-in.
"MALLET" ARTICULATED COMPOUND LOCOMOTIVE
TYPE, 0-6-6-0.—**ENGINE**

CYLINDERS	Diameter H. P., 18 in L. P.	28½-in.	
	Stroke	28-in.	
WHEELS, Diameter		4-ft. 3-in.	
WHEELBASE	Rigid	9-ft. 8-in.	
	Total	29-ft. 4-in.	
	Engine & Tender	-ft. -in.	
WORKING PRESSURE		200-lbs. per sq. in.	
HEATING SURFACE	Tubes	2,425 sq. ft.	
	Firebox	166 sq. ft.	
	Total	2.591 sq. ft.	
FIREGRATE AREA		45 sq. ft.	
BOILER FEED		2 Injectors.	
TRACTIVE FORCE at 50% of Boiler Pressure		35,576-lbs.	
WEIGHT	In Working Order	96 tons 10 cwts.	
	On Coupled Wheels	96 tons 10 cwts.	

TENDER

TANK Capacity..... gallons FUEL Space..... cub. ft. WEIGHT, Full..... tons cwts



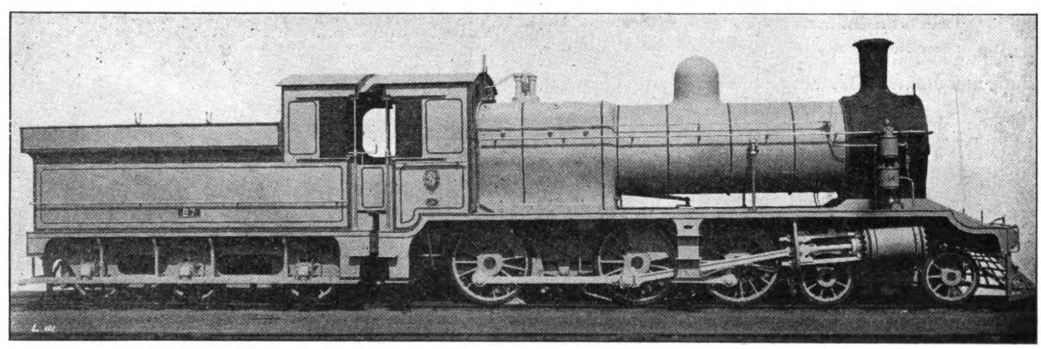
Reference No. I. 232

GAUGE OF RAILWAY, 4-ft 8½-in.
TYPE, 4-4-0.—**ENGINE**

CYLINDERS	Diameter	18-in.	
	Stroke	26-in.	
WHEELS	Coupled, Diameter	6-ft. 7-in.	
	Bogie, Diameter	3-ft. 6-in.	
WHEELBASE	Rigid	8-ft. 3-in.	
	Total	25-ft. 2-in.	
	Engine & Tender	48-ft. 9-in.	
WORKING PRESSURE		180-lbs. per sq. in.	
HEATING SURFACE	Tubes	1,467.39 sq. ft.	
	Firebox	162.61 sq. ft.	
	Total	1,630 sq. ft.	
FIREGRATE Area		28 sq. ft.	
TRACTIVE FORCE at 75% of Boiler Pressure		14,395 lbs.	
WEIGHT	In Working Order	57 tons 8 cwts.	
	On Coupled Wheels	37 tons 10 cwts.	

TENDER

TANK Capacity..... 3,500 gallons. FUEL Space..... 315 cub. ft. WEIGHT, Full..... 42 tons 13 cwts.



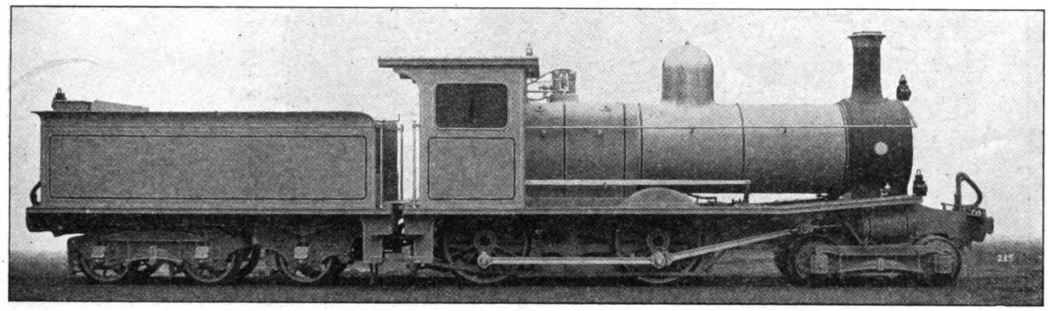
Reference No. L 101

GAUGE OF RAILWAY, 4-ft. 8½-in.
Type, 4-6-0.—**ENGINE**

CYLINDERS	Diameter	18-in.	
	Stroke	26-in.	
WHEELS	Coupled, Diameter	4-ft. 9-in.	
	Bogie, Diameter	3-ft. 0-in.	
WHEELBASE	Rigid	13-ft. 9-in.	
	Total	24-ft. 11-in.	
	Engine & Tender	48-ft. 6-in.	
WORKING PRESSURE		180-lbs. per sq. in.	
HEATING SURFACE	Tubes	1,467.39 sq. ft.	
	Firebox	162.61 sq. ft.	
	Total	1,630 sq. ft.	
FIREGRATE Area		28 sq. ft.	
BOILER FEED		2 Injectors.	
TRACTIVE FORCE at 75% of Boiler Pressure		19,951-lbs.	
WEIGHT	In Working Order	60 tons 6 cwts.	
	On Coupled Wheels	46 tons 7 cwts.	

TENDER

TANK Capacity..... 3,500 gallons. FUEL Space..... 315 cub. ft. WEIGHT, Full..... 42 tons 3 cwts.



Reference No. L 285.

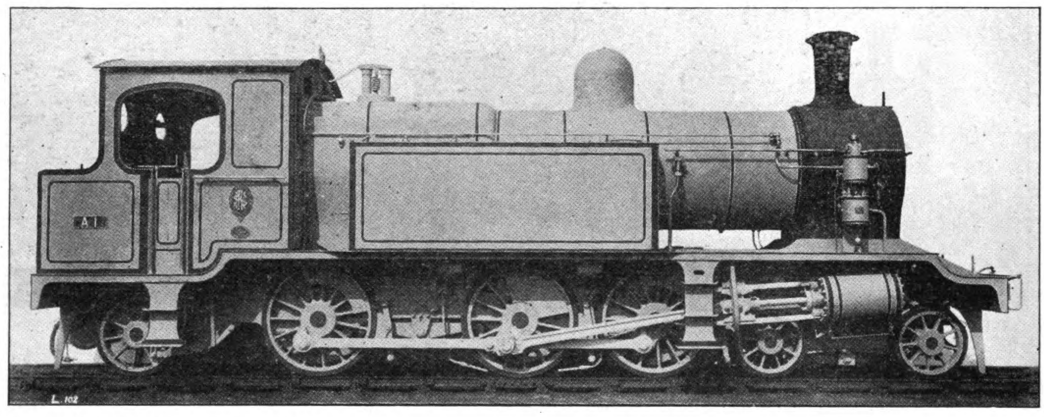
GAUGE OF RAILWAY 3-ft. 6-in

TYPE, 4-4-0.—**ENGINE**

CYLINDERS	Diameter	16-in.	
	Stroke	22-in.	
WHEELS	Coupled, Diameter	4-ft. 6-in.	
	Bogie, Diameter	2-ft. 4-in.	
WHEELBASE	Rigid	8-ft. 4-in.	
	Total	21-ft. 7-in.	
	Engine & Tender	40-ft. 0-in.	
WORKING PRESSURE		160 lbs. per sq. in.	
HEATING SURFACE	Tubes	899 sq ft.	
	Firebox	98 sq. ft.	
	Total	997 sq. ft.	
FIREGRATE Area		17 sq. ft	
BOILER FEED, Two Injectors		1 No. 8 and 1 No. 7.	
TRACTIVE FORCE at 75% of Boiler Pressure		12515-lbs.	
WEIGHT	In Working Order	33 tons 10 cwts.	
	On Coupled Wheels	22 tons 4 cwts.	

TENDER

TANK Capacity	2300 gallons.	
FUEL Space	110 cub. ft.	
WEIGHT, Full	25 tons 10½ cwts.	

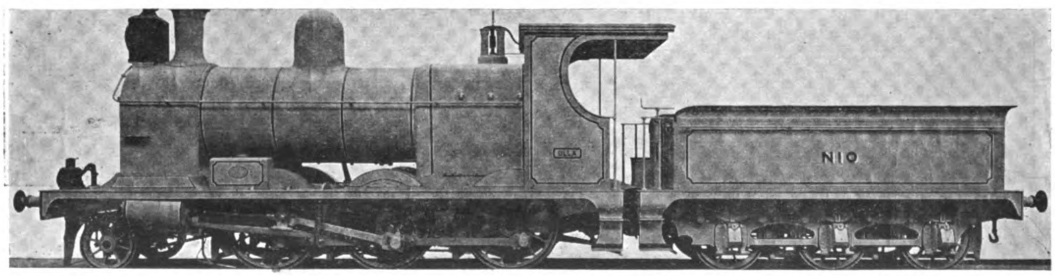


Reference No. L 102.

GAUGE OF RAILWAY, 4-ft. 8½-in.

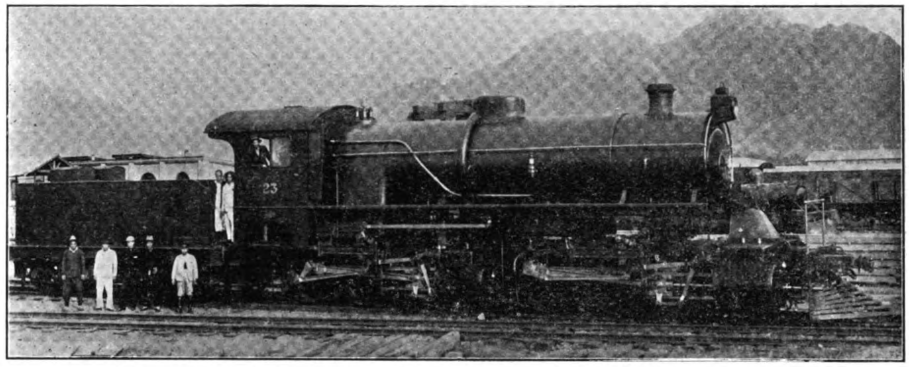
TYPE 4-6-2.—**TANK ENGINE**

CYLINDERS	Diameter	18-in.	
	Stroke	26-in.	
WHEELS	Coupled, Diameter	4-ft. 9-in.	
	Bogie, Diameter	3-ft. 0-in.	
	Radial Diameter	3-ft. 6-in.	
WHEELBASE	Rigid	13-ft. 9-in.	
	Total	32-ft. 5-in.	
WORKING PRESSURE		180-lbs. per sq. in.	
HEATING SURFACE	Tubes	1,467.39 sq. ft.	
	Firebox	162.61 sq. ft.	
	Total	1,630 sq. ft.	
FIREGRATE Area		28 sq. ft.	
BOILER FEED		2 Injectors.	
TRACTIVE FORCE at 75% of Boiler Pressure		19,951-lbs.	
WEIGHT	In Working Order	74 tons 7 cwts.	
	On Coupled Wheels	47 tons 16 cwts.	
TANK Capacity		1,120 gallons.	
FUEL Space		77 cub. ft.	

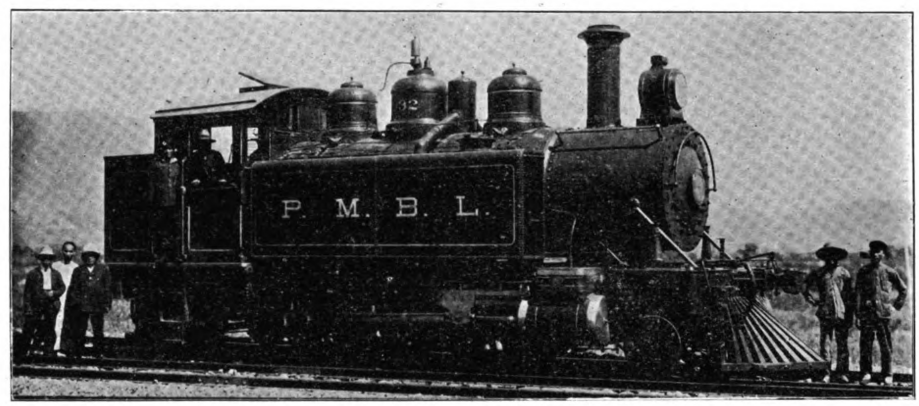


TYPE OF NORTH BRITISH LOCOMOTIVE SUPPLIED TO THE TIENTSIN-PUKOW, SOUTHERN SECTION

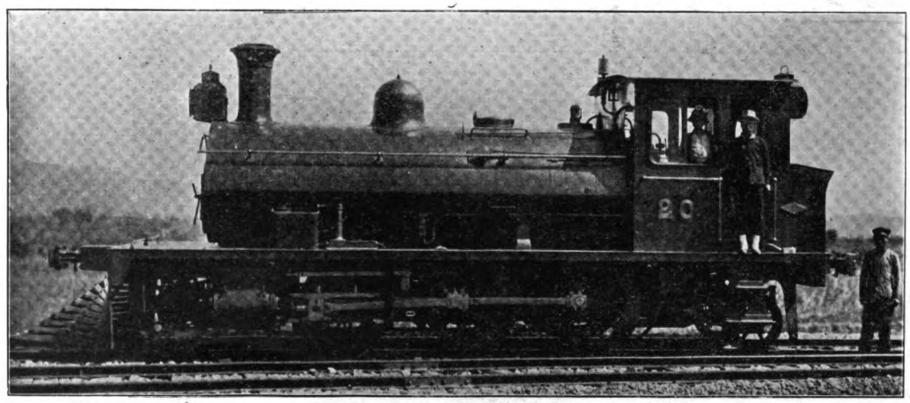
Types of Locomotives in Operation on the Imperial Pekin-Kalgan Railway



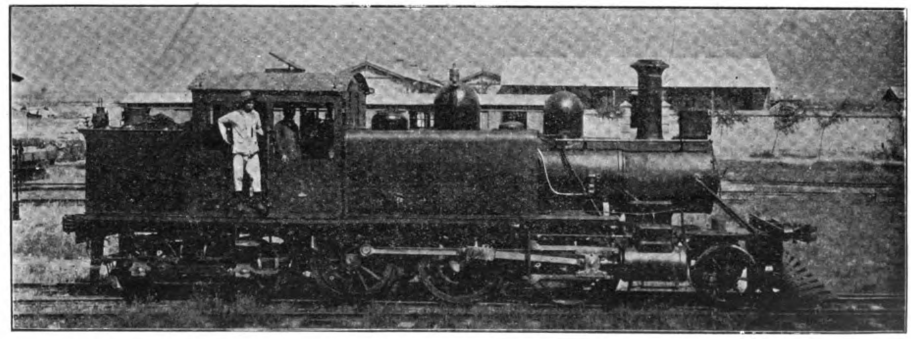
MALLET TYPE FROM THE NORTH BRITISH LOCOMOTIVE CO. LTD.



SADDLE TANK LOCOMOTIVE FROM THE BALDWIN LOCOMOTIVE WORKS



BUILT BY THE NORTH BRITISH LOCOMOTIVE CO. LTD.



BUILT AT THE TONGSHAN WORKS OF THE I. R. N. C.

in one piece with a broad vertical foot which fits up against the outside of the frame and is securely bolted into place. Between the guide bearers, the frames are braced transversely by a deep cross tie. Similar ties are placed under the front of the fire-box, and ahead of the main driving axle. The frames are bolted, at the rear, to a cast steel foot plate.

The engineman is located on the right hand side of the cab, and the general arrangement of the fittings is similar to American practice. Two sand boxes are provided, and they are placed under the running boards, immediately in front of the leading drivers. The equipment includes English Westinghouse automatic quick acting air brakes. Whitworth threads are used on all bolts, nuts and staybolts.

The tender is carried on three pairs of wheels and the loads on the second and third pairs are equalized. The frames consist of steel plates; they are placed outside the wheels, and are strongly braced transversely between the axles. Steel plates are also used for the bumpers. The tank is wedge shaped, and carries 4800 gallons of water. The fuel space has a sloping floor throughout its entire length, and accommodates 7-½ tons of coal. The tender wheels, like those of the engine truck, are steel tired with cast steel centers, and were manufactured by the Standard Steel Works Co.

In general outline these engines present a pleasing appearance. They are simple in construction, and as the valve motion is entirely outside the wheels, the plate frames in no way prevent access to the working parts. The engines combine, to a marked degree the flexibility of the American locomotive with various structural features which are characteristic of European practice.

BALDWIN LOCOMOTIVE WORKS

Class 8-32 D, 776.—Road No. 15

Built for Tientsin-Pukow Ry., Southern Section.

Gauge	4′-8½″
Cylinder	19″×24″
Valve	Balanced.

BOILER

Type	Straight.
Material	Steel.
Diameter	61¾″
Thickness of sheets	⅝″
Working Pressure	180 lbs.
Fuel	Soft coal.
Staying	Radical.

FIRE BOX

Material	Copper.
Length	87″
Width	40″
Depth, front	75½″
Depth, back	65½″
Thickness of sheets	sides ½″
Thickness of sheets	back ½″
Thickness of sheets	crown ⅝″
Thickness of sheets	tube ¾″ & ½″.

WATER SPACE

Front	3½″
Sides	2½″
Back	3″

TUBES

Material	Iron.
Wire gauge	No. 12.
Number	238.
Diameter	2″.
Length	12′-0¼″

HEATING SURFACE

Fire Box	140 sq. ft.
Combustion Chamber Tubes	1489 sq. ft
Firebrick Tubes	sq. ft.
Total	1629 sq. ft
Grate Area	24.2 sq. ft

DRIVING WHEELS

Diameter, outside	60″
Diameter center	54″
Journals, main	8″×10″
Journals, others	8″×10″

ENGINE TRUCK WHEELS

Diameter, Front	36″
Journals,	6″×10″
Diameter, Back	
Journals	

TRAILING WHEELS

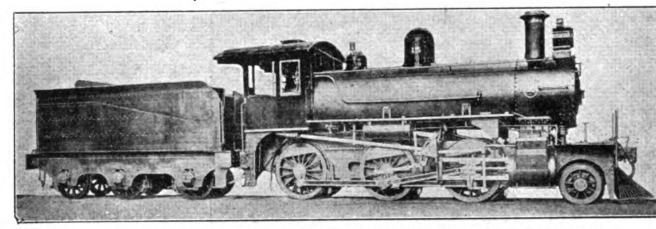
Diameter	
Journals	

WHEEL BASE

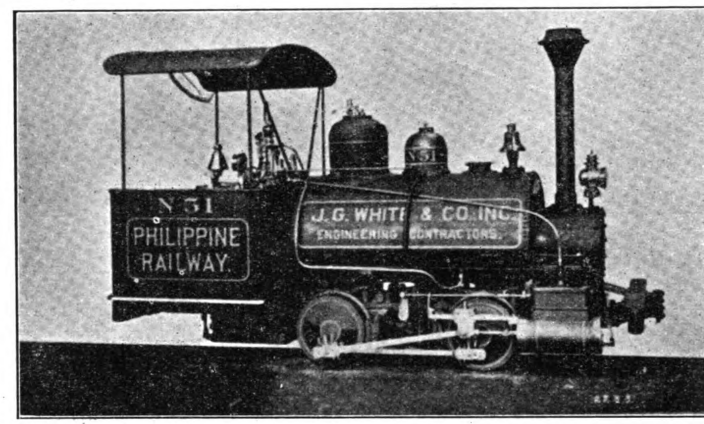
Driving	15′-0″
Rigid	15′-0″
Total Engine	23′-3″
Total Engine & Tender	46′-3″

WEIGHT

On Driv. Wheels	101800 lbs.
On Truck, front	23150 lbs.
On Truck, back	
On Trailing Wheels	
Total Engine	124950 lbs.
Total Engine & Tender, about	221000 lbs.



BALDWIN LOCOMOTIVE BUILT FOR THE PHILIPPINE RAILWAY COMPANY



THE TYPE OF SMALL LOCOMOTIVE BUILT BY THE BALDWIN LOCOMOTIVE WORKS FOR THE PHILIPPINE RAILWAY COMPANY

TENDER

Wheels, Number	6
Wheels, Diameter	45″
Journals	6¼″×10″ I
Tank Capacity	4000 Imp. gals
Fuel Capacity	7½ tons.
Service, Passenger & Freight.	

LOCOMOTIVES FOR THE PHILIPPINE RAILWAY

The type of locomotive most suitable for service in any particular locality is determined chiefly by the conditions existing in that locality. In the early days of railroad operation, American builders developed locomotives specially adapted to meet prevailing conditions. Railways, as then constructed, had poorly surfaced tracks, numerous sharp curves and been built to American designs for service in heavy grades. This necessitated a design of locomotive having a flexible wheel base, with the weight distributed and equalized in such a manner that each wheel found a bearing when running over uneven tracks. Locomotives fulfilling these conditions were produced and the development of the American locomotive has since progressed along the lines indicated above. American designs have further been characterized by simplicity of construction, the absence of unnecessary finish and ease of maintenance and repairs. These features have proved of value in maintaining the power where adequate repair facilities were lacking.

The conditions described above, as formerly existing on American railways, are today frequently found in provincial and colonial countries, and in such localities American locomotives have been used with marked success. The Baldwin Locomotive Works, since completing their first locomotive in 1832, have exported approximately 18 per cent of their output. The majority of these engines have newly developed countries, and their performance has proved highly successful.

Three designs of locomotives were shipped by the Baldwin Locomotive Works, during recent years, to the Philippine Railway. Engines are of the Mogul type,* with three pairs of coupled driving wheels and a two-wheeled leading truck. These locomotives are built for a track gauge of 3 feet 6 inches, and are suitable for general road service. The line has grades of 1-½ per cent, and the sharpest curves are of 15 to 20 degrees radius. The engines are fitted for burning Philippine lignite, the grates are of the rocking pattern, and the smokestacks and front ends are specially designed to prevent spark throwing. The boilers and fire-boxes are built of steel plate throughout, and the frames are of forged iron. Both locomotives are equipped with Vanderbilt tenders, having cylindrical water tanks.

*See illustrations, page 558.

FAR EASTERN RAILWAY NEWS

THE GEMAS-KUALA PILAH RAILWAY.—This line, which connects Gemas and Kuala Pilah, a distance of approximately 36 miles in length, was opened for traffic by the F. M. S. Railways on April 4th. The branch from Kuala Pilah connecting with the East States Trunk at Bahua station is 13 miles in length and from Bahru to Gemas, 23 miles. The opening of this line brings Kuala Pilah within 162 miles by rail from Singapore.

The stations along the line are Kuala Pilah, Juasseh, Bahau, Rompin, Plangei and Jempol. The distance is covered in about two hours.

NEW SHANTUNG RAILWAY.—Negotiations are in progress between German representatives and the Chinese Government with reference to the construction of a line connecting Ichoufu with Tsingtao. It is understood that a loan is being arranged with the Deutsch-Asiatische Bank similar to the Pukow loan and the railway will be built by the Chinese. It is not improbable that the Government expects to receive some assistance in this construction from the profits of the Tientsin-Pukow line.

THE CANTON-KOWLON RAILWAY.—H. E. Liang Shih-yi of the Board of Posts and Communications has been visiting Canton adjusting the difficulties on the Chinese section between the natives and the railway authorities. Recently a mob of about 3,000 threatened the destruction of this line and made a demonstration near the British boundary. H. E. the Governor of Hongkong recently made a tour of inspection over the British section, and with the exception of one bridge the trip was made from Kowloon Point to the frontier by rail.

THE YALU BRIDGE DIFFICULTY—As near as can be ascertained the negotiations between the Chinese and Japanese authorities with respect to the construction of this bridge have been satisfactorily concluded. The agreement as it now reads provides that the half of the bridge on the Manchurian side will be purchased by China after 15 years or the date upon which the Antung-Mukden Railway is redeemable. China is to establish a custom house on the western bank for the inspection of trains. Details are to be arranged later. It will be remembered that the boundary between Korea and Manchuria is established in the middle of the Yalu River. The sum of yen 5,000,000 has been appropriated by the Japanese government to cover the cost of this construction which is expected completed in 1912.

ANTUNG-MUKDEN CONSTRUCTION.—With the recent open weather there has been renewed activity in construction, over 80,000 coolies being reported working on the line. Frequent collisions between the Chinese and Japanese police are reported, but an adjustment is expected satisfactory to both sides. The following signal stations have been converted to passenger stations:

Taling, Tatung, Fuchin, Chinkeng, Chinchia, Fenshuiling, Liuchiaho, Heikeng, Tafangshenling and Hamatang.

SUMATRA RAILWAYS.—A proposal is being considered to construct a line connecting Sawa-Loento and the east coast of Sumatra at a point directly opposite Singapore. This will be followed by a direct line from the Ombilan mines to Padang. These railways will facilitate the transportation of coal to the coast.

PEKING OVERHEAD TRAMWAYS.—Advices from Peking are to the effect that the proposal of an American company to instal an elevated railway in Peking has been declined.

THE KIRIN-CHANGCHUN RAILWAY.—The construction on this line is now under way and a site has been chosen for the Changchun station at a point north of the east gate of the walled city and on the bank of the Itung, a branch of the Sungari. It is considered desirable with a view to making connections with the South Manchuria at this point at once in order to facilitate the transportation of materials for the line.

THE FUKIEN RAILWAY COMPANY.—The first section of this line was opened to traffic on May 9th. The terminus is at Seng Suu to which point the railway ferry carries passengers from Amoy. The section opened to traffic is only two miles in length and has taken over three years to complete on account of lack of funds. The construction and operation is entirely under the direction of Chinese.

PEKING RAILWAY NEWS.—The following is a résumé of new railway lines to be constructed with Chinese capital and by Chinese engineers: The Tsang-Hsu Railway from Chinkiang by way of Tsing Kiang-pu to Hsuchow fu, a distance of 100 miles; Peking-Ching-wang-tao Railway or rather a branch of the Peking-Kalgan, a distance of 100 miles; the Tiao-Liao Railway running from the upper part of the Liao to Tiao Nanfu, Manchuria, a distance of 100 miles.

FOUR TRACKS FOR THE SHIMBASHA-HODOGAYA RAILWAY.—The Railway Board of Japan has decided to double the present double track on this section of the Tokaido line. Some difficulty is expected in acquiring the land necessary for the widening of the road bed.

THE CANADIAN GRAND TRUNK LINE.—With the completion of this Canadian Transcontinental railway in September the distance across the continent will be shortened by about 500 miles.

OIL FOR FUEL IN JAPAN.—The use of oil for fuel for the locomotives on the line to Hachioji has been found satisfactory as a result of tests made last month and beginning the first of May, all the passenger locomotives will burn oil.

HONAN-TUNKWAN LOAN AGREEMENT.—This agreement as published in the *Sinwanpao* has twelve sections under which the railway agrees to borrow Tls. 2,000,000, the interest to be at the rate of 6.8% and the bonds to be taken up by the Kungyi bank at 95. The Kungyi Bank will advance Tls. 500,000 at once and the balance in September this year. A penalty for delay in advancing these sums is provided at the rate of Tls. 5 on every Tls. 10,000 per day. And if delay extends over a month he railway company may decline to accept the loan. The agreement to repay carries the same penalties. The revenue from salt duties will be given as security. The loan will extend over a period of eight years and may be retired previously at option of the railway. The bank must not interfere with the construction or administration nor be permitted to inspect the railway accounts. If the railway fails to meet its obligations in the payment of interest and principal when due, the railway company agrees to turn over the line with equipment, etc., to the Board of Agriculture, Industries and Commerce to be valued officially and the price decided upon turned over to the bank in payment in full for balance of loan unpaid.

THE BANGKOK-SINGAPORE RAILWAY —A report from Berlin is to the effect that two German engineers have left there to join the English staff engaged in surveying this line. It is expected that the construction will take over seven years. The line in Siam is approximately 950 miles in length.

NEW TRANS-FORMOSAN RAILWAY.—A party of engineers is now engaged surveying the route of a railway from Bashi-ho on the west coast to Karenko on the east coast of Formosa.

RAILWAY CONNECTIONS AT KUALA LUMPUR.—Recommendations have been made for a readjustment of the through traffic from Penang to Singapore now greatly delayed by the large local traffic at Kuala Lumpur where the trains run into a terminal and backed out again instead of through a central as suggested by J. E. Bach, A. M. I. C. E.

THE SHANTUNG RAILWAY COMPANY.—The shares of this company have advanced to 130 as a result of the declaration of a dividend of six per cent. compared with 4.75% for 1908. The desire of the Chinese Government to acquire this railway has also been given as another reason for the advance in price.

MALAYA RAILWAYS.—The budget considered by the Federal Council for 1910 dealt with an estimated revenue of $23,250,000, an expenditure of $26,000,000, and an accumulated surplus of $37,000,000 approximately. A second trunk line is being constructed between Negri Sembilan and Pahang and will prove of great benefit to the latter state which has been sadly in need of lines of communication to aid her development.

THE CHEFOO-WEIHSIEN RAILWAY.—Latest advices from Chefoo are very encouraging. Governor Sun Pau Tschi has guaranteed the balance necessary to make up the three millions for the construction of the section to Hwanghsien and construction on that section will begin early this summer. The Governor believes that when this section is completed and open for traffic that its success will encourage capitalists to provide funds for the completion of the line.

SIAMESE RAILWAYS.—The construction of the new railway bridge at Petchaburi is nearing completion. The trackwork has been completed as far as Cha-am and when he railway bridge is finished tracklaying will begin southward.

INDIAN WORKSHOPS IMPROVEMENT.—*Railways* announces that the Railway Board has sanctioned an estimate for the new carriage and car shops of the North-western Railway at Lahore. The workshops of the East Bengal State Railway are to be turned into locomotive works and are located at Kanchrapara.

THE SZECHUAN-HUPEH RAILWAY.—A correspondent of the *North China Daily News*, writing from Chengti, reviews the history of the effort of the Chinese to build this line so as to avoid arranging a foreign loan for that purpose. He has taken the pains to make an abstract from the data available showing the receipts and disbursements of the company. Apparently Tls. 15,405,952 have been paid in and a balance of Tls. 10,421,958 remains on hand while nothing has been accomplished in the way of construction for the Tls. 5,000,000. Of the balance on hand it appears the most of it has been advanced to private firms.

At Hankow, Tls. 1,121,385 is invested in the Hangyang Iron Works while the rest, Tls. 4,130,970, is out at interest with private firms. At Chengtu Tls. 782,202 is out in the same way. Tls. 46,136 has been invested in a Tannery and Tls. 100,000 in an opium refuge. The whole of the sums at Shanghai, viz: Tls. 3,439,779 and at Chungking, viz: Tls. 690,102, are also let out at interest with private firms.

Work is being commenced at last on the first section from Ichang to Kweifu in Hupeh, a distance of 90 miles, which is expected to absorb Tls. 10,000,000. The correspondent is not impressed with the capacity of those in charge to carry out the work to a successful conclusion and predicts that the line will eventually have to be subjected to foreign expert and financial assistance or it will never be constructed.

THE SIBERIAN RAILWAY PROSPECTS.—It is not generally known that during the last year on the Siberian Railway extending from Cheriyabinsk to Irkisk, a distance of approximately 2,000 English miles, the freight carried was over 30 per cent. greater in volume than in the previous year while the receipts increased by about 20 per cent. When it is known that this line was being operated at a loss not more than three years ago it would be well to reserve opinion on the future of the Trans-Baikal or the Chinese Eastern Railway with which lines the Siberian line is often confused. Commenting on the relation of the Siberian Railway with other Russian lines the *China Tribune* offers some interesting information that tends

to show that this line promises to become the most profitable in the Russian Empire. A glance over the statistics for the eight months from January to August, 1909, says the *Tribune*, will show that the entire receipts of the Government railways in Russia amounted to 357,000,000 roubles. This is an increase of 10,000,000 roubles over the gross receipts during the same period of the year before last. On the other hand, the expenses aggregated 284,000,000 roubles, 13,000,000 less than the sum spent during the previous year, while the net receipts in the eight months in 1909 show an increase of 23,500,000 roubles over that of the corresponding period in 1908. What portion then did the profit of the Siberian Railway contribute toward this aggregate amount?

In regard to the freight traffic, the amount the Ekaterinskaya, the Southern, and the South-Western Railways handled was each an increase of about 27,000,000 poods over the goods transported during the previous year. Like the abovementioned lines in European Russia, the Siberian Railroad also increased the volume by the same amount, that is to say 32% increase. But the railroads near Moscow and those in Poland and Central Asia all experienced a decrease of freight.

In regard to the gross receipts, the South-Western Line leads the list with 39,900,000 roubles followed by the Southern Railway, 37 million roubles, and the Ekaterinskaya Line, 34 million roubles. The Siberian Railroad comes next with 32,000,000 roubles which is an increase of 5,100,000 roubles or 19% over the receipts of the previous year.

Concerning the expenses, the South-Western Railway spent 27,500,000 roubles, while 24,500,000 roubles and 24,000,000 roubles were spent respectively by the Southern and Ekaterinskaya Lines, against 20 million roubles of the Siberian Railway. When the matter is looked at from the point of net profit, the latter line cleared 12 million roubles and occupies the position second to the South-Western Railway, 13,000,000 roubles, of all the Government railway in Russia that made money.

It is expected that notwithstanding many alterations in the Eastern and Western Sections the double tracking of the Siberian Railway will be completed by the end of 1912. According to *Engineering*, from St. Petersburg, the actual line proceeds via Wiatka in an easterly direction to Perm. The old line went from Perm first northeast and then south, via Nishny Tagilsk, along the Ural Mountains to Jekaterinburg. This section had a length of 310 miles. The new almost completed track cuts in a nearly straight course from Perm via Kuara to Jekaterinburg, avoiding the mining districts which the old line served, and reducing the length of the section to 244 miles. Beyond Jekaterinburg the old track led via Cheljabinsk and Tjumén to Omsk, on the River Irtisch. The new track passes via Cheljabinsk and Kurgan (on Asiatic territory), and Petropavlosk to Omsk, 100 miles will be saved on this section, which has only recently been taken in hand. The direct service from St. Petersburg to Omsk is to be carried on at a minimum average speed of 26 miles per hour. Further important changes and additions are planned in the Extreme East. So far, the line cuts through Manchuria, where the railway is partly under Russian and partly under Japanese administration, and ends at Vladivostock, the Russian port on the Japanese Sea, in the same latitude as London. Peking is reached from Harbin junction in Manchuria by a branch proceeding to the southeast via Mukden and Hsinmintun. In order to connect Peking directly with the Siberian, and thus with the European, railway system, a line is to be built from Peking north, through Eastern Mongolia. The section of this line which lies in China proper, from Peking to Kalgan, is already working; this section has a length of 135 miles. Following more or less the great caravan route across Eastern Mongolia, the railway is to join the Siberian system via Kiachta, south of Lake Baikal, near Myssowaja; this Mongolian railway will have a length of nearly 1000 miles. When these projects will have been carried out, the journey from Paris to Peking, a distance of about 6300 miles (instead of 7500 miles via Harbin and Mukden), will be completed in 9½ days; at present it takes nearly fourteen days. The lengths of the various sections, and the average times to be taken on them, are the following:—Paris-Berlin, 626 miles, in 18 hours; Berlin-St. Petersburg, 1020 miles, in 20 hours; St. Petersburg-Perm, 1075 miles, in 41 hours; Perm-Irkutsk, 2315 miles, in 90 hours; Irkutsk-Kiachta, about 300 miles, in 12 hours; and Kiachta-Pekin, about 390 miles, in 40 hours.

THE SHUN-CHI OR THE SHUNTEHFU-CHINANFU RAILWAY PROJECT.—Peking advices are to the effect that the construction of a railway connecting Shuntehfu in Chihli, province and Chinanfu in the province of Shantung, covering a distance of 480 li or 170 miles, 100 miles of which will run through Shantung and 60 miles in the province of Chihli, has been authorized. The route chosen passes from Chinanfu through Chihó, Yucheng, Hsiatsin, Jenping, Kaotang, Linching and Kuantao in Shantung, thence into Chihli via Chuchou, Weihsien, Pingsian, Kwangtsung, Nanho, Hsingtai and joins the Ching-Han Railway at the Shuntehfu station.

The construction of this line offers few engineering difficulties as the country through which it will pass is generally level. There are in all twenty-two rivers and canals to cross, including the Yellow River, and it is proposed to utilize the bridge of the Tientsin-Pukow at Lokou. Of the balance of the rivers none exceed a width of 130 feet. The cost of the entire line is estimated at Tls. 5,000,000. While the districts through which it will pass has suffered from severe floods and the natives are very poor, under favorable conditions the line will pay well. It will be of great strategetic and political importance to the emipre.

The project was first proposed several years ago, but the Tientsin-Pukow Railway project took precedence and it was not until a year ago that the matter was again taken up by H. E. Hsu Shih Chang who directed the Viceroys of Chihli and the Governor of Shantung to present new petitions asking for the construction of this line. Governor Sun Pao of Shantung dispatched engineers to verify the line and report and the result was the approval of the line by the Peking authorities.

MEDALS FOR CHINESE RAILWAY EMPLOYEES.—The Board of Communications recently submitted a memorial to the Throne proposing to confer medals on the various staffs of the steamship, railway, telegraph and posts administrations as an encouragement for those who prove efficient and industrious. An official résumé of the deliberations of the Board on this subject was also submitted in which that body announces that the services of steamship, railway, telegraph, and posts are established for the purpose of providing easy means of communication and adds that, although the Board is in charge of the interior management of these administrations, it depends to a great extent upon the staffs to properly fulfil this mission. Quoting from the Board's deliberations, we find that it reached the conclusion to recommend medals as follows: The staffs employed in the various offices of the telegraph and railway administrations, such as engineers, mechanics, police inspectors, operators, and many others, are already very large and will be greatly increased when the steamship and posts administrations revert to its control. Thereupon it shall be the duty of the board to provide regulations for punishing the lazy and rewarding the industrious. There being no prospect of any member of any of these staffs to secure higher position or official rank while, on the other hand, he is subject to fine for trifling offences and punished or dismissed for severe offences, just how to reward them is a difficult problem. To grant them official rank which they do not deserve or to reward them with increase in pay do not seem feasible. The former is not to be considered and the latter would result in good deeds bankrupting the treasury. Therefore it has been decided that the most feasible way of granting rewards for good service is to confer medals similar in form to those issued by the Board of Interior, of which there are five classes with ranks—from the 5th to the 9th rank—in recognition of good services rendered.

REORGANIZATION OF THE PEINLO RAILWAY STAFF.—The Board of Communications lately memorialized the Throne on the subject of reorganizing the foreign and the Chinese staffs on the Peinlo Railway with a view to reducing expenditure and reforming its administration. This line runs through the province of Honan from Keifengfu to Honanfu. In the loan agreement concluded with the Belgians in the 29th year of Kwung Hsu in connection with the construction and operation of this railway, it was stipulated that the Chinese Railway Administration should appoint the members of the staff. Recently the Board of Communications was advised that the Belgian Syndicate had assumed control of the traffic in Keifengfu and the former interpreted this action as an attempt on the part of the latter to usurp the powers of management with the intention of employing an additional number of foreigners. The Board noted in its memorandum that while steps had been taken to dispense with the services of those foreigners who could be spared, only a few of this number had been discharged. After serious consideration of the question the Board has decided that reorganization or change in the administration of a railway as soon as it is opened to traffic is the remedy to prevent the management of the traffic reverting to foreigners.

As a result, the Director of Railways, H. E. Liang Shih Yih, has been instructed to arrange with the Belgian Syndicate for the reduction of the staff and to make an inspection of the line with a view to reorganization of the administration as well as officers and employees. In addition, he is to confer in company with the manager of the line, with the Chief Belgian Engineer, with a view to negotiating with the head office of the Syndicate in Europe on the question of the reduction of its staff. Under the following five headings the Board has decided to direct the reduction of the staff of this line:

1. Staff in the Managing Department, out of the officers in charge of the purchasing of land and policing, interpreters, clerks, medical officers—19 in all—three will be retained.

2. Engineering staff:—Out of the overseers, interpreters, tracers, paymasters—42 in all—11 will be retained. All the staff now employed in the repairing of the roads, creek and bridges will be dispensed with as soon as the work is completed.

3. Traffic staff:—Although the traffic on this line may be increased, the line is not long enough to require a traffic manager. Only one foreign district inspector is to be stationed at Changchow together with three Chinese district inspectors.

4. Factory Staff:—One factory district inspector and four Chinese mechanics at the locomotive factory to be required.

5. Staff at the head office of the Belgian Syndicate in Europe:—It has been decided that from the 1st month of the next foreign year the yearly salaries of the managers, engineers, and secretaries, will be reduced and that the services of one special engineer will be dispensed with

It is estimated that 15,000 francs additional can be saved and the Belgian Syndicate has agreed to the reduction. The staffs as compared with the number employed at the end of last year will show a reduction of 26 foreigners and 23 Chinese thereby saving the sum of Tls. 52,000 annually

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THE KAIFENGFU-SUCHOW-HAICHOW RAILWAY.—A memorial was presented to the Throne on March 8th by the Board of Communications asking Imperial sanction for the construction of a railway connecting Kaifengfu, in Honan, and Haichow, a seaport on the Northern Coast of Kiangsu. According to the memorial the Chinese Government has completed the survey and the report of the engineers furnishes many points in favor of an early construction.

Between Kaifeng and Suchow two routes were considered. One reaches Hsuchow via Chenliu, Kihsien, Suichow, Ningling, Kuite, and Tangshan, while the other is via Lanfeng, Kaocheng and Liukow, along the old course of the river Houng-ho to Suchow. The latter

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The Chinese Eastern Railway, an article in the Tientsin published in the Japanese weekly "China Tribune" describes how Russia managed in 1896 to skillfully and secretly obtain an agreement from Earl Li for the building of the Chinese Eastern Railway as a reward for pushing Japan to return the Liaotung Peninsula to China. The agreement provided for the Trans-Baikal line with the Ussuri Railway. Later in March 1898 the Russian Pacific Squadron sailed into Port Arthur and hoisted the Russian flag, forcing China to sign the "Treaty of Leasing the "Kuantung Territory". On 24th June the Russians further secured the concession for building the line across South Manchura. In 1899 the "Regulations of the Chinese Eastern Railway Company" were sanctioned which provided for the control of 1,600 miles of railway from Manchuria to Tairen (Dairen) and Port Arthur and Pogranichinaya in the East through the eastern provinces of China. No sooner had the railway been completed in 1904 when the Russon-Japanese war broke out resulting in the Russians losing the line south from Kuanchengtze under the Treaty of Portsmouth. In 1906 the Ussuri line, owned by the Russian Government, was let to the Chinese Eastern Railway for 25 years. Although the company was registered as a private company in reality it was still owned by the Russian Government. The management was however autonomous with links to the Minister of Finance.

The total sum expended on the railway had reached some 662,000,000 roubles and average annual subsidies were running at about 19,000,000 roubles, a huge drain on Russian Government resources.

Photographs of Major-Gen. Hovarth, Chief of Staff & M.D , the administration building at Harbin, Lieut.Ge. Tschitagoff in command of the Russian Railway Guards, Manchuria, a number of other buildings, and H.E. Shih Sao Chi, the Customs Taotai and Chief Chinese Authority in Harbin.

Railway Strategy in China – The Kaifengfu-Haichow Line, this article by FER editor Rea, examines the railway strategy adopted by China to compete with German and British railway interests and thus reassert authority within her own lands. China had announced her intention of building a line from Kaifengfu through Suchowfu and Tsingkiangfu and thence onto a newly opened port at Haichow, which was on the NE coast of Kiangsu Province and just south of the Shantung border. The new port and line was intended to capture trade from Tsingtao and China's interior and provide China with an ice-free port in the north. Protests were expected to come from both the Germans and the British who would consider "their" interests threatened. Rea concludes by stating that the whole matter was likely to degenerate into a repetition of the Chinchow-Aigun "embroglio" with the European powers still refusing to recognize the China's right to build a railway in her country without their consent. How long would this continue?

Antung-Mukden Reconstruction, It was expected that over 50 miles between Antung and Chihkwanshan would be completed by October that year. The broad gauge had been laid for 25 miles between Mukden and Shihchiaotsu. Work on the 25 tunnels was being pressed. The whole project was expected to be completed by August 1911 with the Yalu bridge ready the following year. When Mukden and Fusan were linked it would become an important highway between Japan and Russia, as well as new way to Peking via the connection with the Peking-Mukden Railway.

International Through Traffic Agreement, The SMR had been advised of the conclusion of talks between Russia and Japan concerning the combining tariffs on the SMR and CER with special rates for various types of produce.

Tiehling-Hailungcheng Railway, a Chinese engineer was surveying this line which would tap the Sungari River region and secure trade which until then had passed through Kirin.
Hong Kong –Canton Railway, indications were that the line to the Kowloon boundary would be finished by July 1st. The Chinese Section would not be ready until about August 1911.
The Canton-Macao Railway, The Portuguese Minister was again attempting to obtain consent for the construction of this line with Chinese & Portuguese capital.
The Yunnanfu Railway, it was reported that Haiphong was disappointed in the small increase in traffic following the opening of the railway.
Harbin-Hsui Hua-Hai Lun Railway, news had been received that local banks were willing to finance this 150 mile line which would serve to carry cerials to the Mongolian interior.
South Manchuria Railway Receipts, passenger receipts for April were ¥337,277 and freight ¥753,678.
Lokyang-Tungkwan Railway Finance, it was reported that a Mr Straight had arranged an American loan for this line, the local banks having failed to raise the money.
New Locomotives for the Shanghai-Nanking Line, the management of this line had placed an order for express passenger tender locomotives ("4-2-2 & 6 Type") with Kerr Stuart & Co.'s California Works at Stoke on Trent who had established an office in Shanghai the previous March. These were similar to engines used on the Midland Railway. A similar order had also been received from the Chekiang Railway.
Profits of Chinese Railways, the net profits for the year 1909 amounted to 6,400,000 Taels according to a Peking newspaper.
Inspection of Railways, the ministry at Peking had decreed that the Fukien, Chaochou-Swatow and Huichow-Chaochou should be inspected. The inspection revealed that only portion of the proposed lines had been built.
The Chefoo-Weihsien Railway, advice was that the money had not been raised for this railway and promises of early construction were unlikely to be fulfilled. Only $1,700,000 was available whilst an initially deposit of $3000,000 was needed.
Hulan-Tungkeng Railway, the Viceroy was trying to obtain sanction from Peking for the construction of a light railway of 117 miles.
The Kirin-Changchun Railway Construction, the rails for this line were to be supplied by Hanyang Iron & Steel Works.
Hunan Railway Agitation, Hunanese natives had been ptotesting about a decision to make use of foreign loans to build railways in Hunan.
Advertisement for the Shanghai-Nanking Railway, a full page advert for the line described as "The Line of a Hundred Pagodas" with pictures of a train emerging from a tunnel and a photograph of the new administration building at Shanghai.
Advertisement for the South Manchurian Railway, a full page advert showing a train headed by an Alco. 4-6-2. The advert describes the thrice weekly express train services between Dairen and Changchun with connections to the Trans-Siberian Expresses and other branch lines. Also pictures of the railway's Yamato hotels at Port Arthur and Dalny.
Advertisement for North British Locomotive Co. – "The Largest Locomotive Works in Europe" comprising: Hyde Park Works (late Neilson, Reid & Co , Queen's Park Works (late Dubs & Co.) & Atlas Works (late Sharp,Stewart & Co.). Includes 2 photopgraphs, one of the Mallet (less tender) supplied for the Peking-Kalgan Line and a 2-6-0 supplied for the Southern Section of the Teintsin-Pukow Line.

Advertisement for Mitsui Bussan Kaisha- Agents in the Far East for American Locomotive Co, Gould Coupler Co., The Pullman Co, Safety Car Heating & Lighting Co., Jones Laighlin Steel Co., & Union Switch and Signal Co. etc. with engineering department offices in Shanghai, Hongkong, Tientsin, Newchwang, Canton, Hankow, Dairen, Mukden, & Changchun etc. 2 photographs of Alco 2-6-0 tender locomotive No.11 supplied to the "Kwong-Tung Yueh-Han Railway" and a Pullman sleeping car on the South Manchurian Railway.

July 1910

Railways in China, 1910-

Sun Ning Railway Extensions, The FER's correspondent describes his travels on the Sunning Railway in Sun Ning County in Canton Province. He was escorted by the railway's President & Manager Mr. Chin Gee Hee along the railway's 39 miles from Kwong Yik to Tao Shun. 3 passenger and 2 freight trains made daily round trips along the line which had 19 stations. At Kwong Yik was a railway office, yards and machine shops. The railway was equipped with 5 large Baldwins, 1 medium Baldwin and 3 small German locomotives. There were two 1st Class coaches, eight 2nd Class, six 3rd Class, sixteen box cars, forty-five freight cars, & sixty dump trucks for construction work. There was also a fine red brick railway office at Sun Ning. The President Mr Chin had spent 43 years in America where he had accumulated a fortune as a railway contractor. He had decided to erect a momument to himself and family by building this railway. He had arranged everything himself including financing, surveying and building the line. The $3000,000 dollars needed had been raised from Chinese merchants in Hong Kong and USA. No Europeans were engaged on the project. The Chinese government had honoured him for his work and he was soon expected to be appointed a Taotai. The line was in the process of being extended for a further 30 miles from a point on the river opposite Kwong Yik to Kwonh Wau Mon (Chinese Customs).

Railways in Anhui, this article discusses the prospects for the proposed Anhui railway schemes which would connect Wuhu with Shanghai in the south-east and with the Peking-Hankow Railway in the noth-west. The matter was complicated by a proposed extension of the Shanghai-Nanking Railway to Wuhu, which would affect the financial prospects of the Anhui lines and other proposed Yangtze River valley projects.

The Kowloon-Canton Railway, the latest word on the opening of the British section was that it had been postponed but 15th July was the likely date. Up to February expenditures had exceeded the original estimates by $4,800,000. There was still much work to do according the Governor but there was no urgency until the Chinese section was completed. Without the Chinese section in operation traffic would be light and the railway could make do with temporary flag stations near Hung Hom and the ferry terminus in Salisbury Road.

The Canton-Hankow Railway, the latest prospects for this railway centred on an agreement between British, German, French and American capitalists putting together a £6000,000 loan for the construction of this line and also the Hankow-Szechuan line. The loan conditions were reported to be the most favourable of any loan ever given to China. The British were to secure the engineering rights for the Canton-Hankow section and the Germans the Hankow-Ichang-Kwangsi loop except for 200 kilometers which were to be given to the Americans. The French were to have no engineering rights. Since 1905 up to May 1910 the Canton Commercial Company had managed to complete only 50 miles noth of Canton with work on another 150 miles in

slow progress. The first branch line, the 33 mile Sam Shui line had been completed in 1904 and the Ping Siang coal mine line of 70 miles in1906. In spring of the current year the Canton Commercial Co. was reported to be in crisis with materials orders cancelled and foreign engineers dismissed.

The Chang-Wei Railway Kalgan-Suiyuan Extension, the proposed extension of the Peking-Kalgan line to Suiyuan had been approved according to a report. The line would go to Changshui via Kuei-Hua, Sui Yuan and be 689 li in length. Construction was estimated to cost 10,660,000 Taels. It would take about 8 years to build because the weather permitted only six months work each year. 6 photographs of senior Chinese railway (and Board of Posts & Communications) officials, photo of station at Shekwaitong, Canton, a map showing proposed line from Shanghai to Chinsan and the proposed Kiangsu extension of the Shanghai-Hangchow-Ningpo line, a map of the lines in Canton district form the 1908 Canton Trade Report, photo of Chin Gee Hee (spelt a Cheun Yee Hee), president of the Sun Ning Railway, and various Canton river steamers.

Financing China's Railways, reported that Hsu Shih Chang, President of the Board of Posts & Communications, had arranged for a loan of 400,000 Taels from Deutsch-Asiatische Bank for the consruction of the Ichow-Kiaochow branch of the Tientsin-Pukow Railway.

Dairen Railway Workshops, a large order for equipment for the new SMR railway workshops at Shakako near Dairen had been secured by Thomas Robinson & Son Ltd of Rochdale.

Shantung Railway Disputes, in view of the failure to settle disputes about railway matters between the German authorities and the Governor of Shantung, the German Minister had suggested the dispute should be referred to Berlin and adjusted there with the Chinese Minister. The current argument was over the routing of the Chefoo line to Kaiphong and whether it should pass through Kaomih. Routing the line through the latter place would enhance (German) Kiaochou's trade to detriment of Chefoo,

Shanghai-Nanking Estimates for half year ending 31 December 1910, General Manager, A. Pope explained that increased expenditure was because of the age of the line and it was necessary to spend more in maintaining the railway's equipment and for more coal. A full set of estimates of revenue and expenditure are provided by H Middleton, Chief Accountant.

Sleeping Cars for the Shanghai-Nanking Railway, the workshops had turned out their first sleeping car coach on June 16. The 68 ft long coach accommodated 17 persons and was divided into male and female births. There were now two such coaches with one reserved for foreigners and one for Chinese.

Szechuan-Hankow Railway Construction, it was reported that 100 miles of track had been laid Between Ichang and Hsiang Chi. The Engineer-in-Chief Jime Tienyue stated that owing to heavy tunneling the line would cost over 110,000 Taels per mile.

Tientsin-Pukow (Southern Section) Car Tenders, a "rushed" advertisement published 1st July called for tenders for six 1st and 2nd Class composite cars and twelve 3rd Class cars. Tenders had to be submitted within just six days.

South Manchurian Railway Company, at the half year meeting the earnings were declared as ¥4,085,832. A first dividend was to be paid to the Japanese Government and other shareholders.

South Manchurian Railway State Cars, the first state cars made at the railway workshops were tried in June. They had cost ¥40,000 per car and were made of imported materials. The cars were 72½ feet in length and divided into 12 compartments and there ladies' and gents' toilet rooms. Most were two-berth compartments although there were two four-berths.

Chinese Contractors Get Contract on the Kirin Railway, only one Japanese contractor had succeeded in getting a contract on the Kirin-Chanchung Railway with most going to the Chinese.
The Chekiang Railway, the Board of Communications had failed to pay a deposit previously agreed.
Another Railway Proposal, a project was reported in hand for the building of a Pootung (Shanghai)-Chinshan light railway line, a distance of 70 miles via Chuansha, Nanhui, Fengsien & Huating.
Punishing Hupeh & Hunan Agitators, Peking had ordered Viceroy Tang to close the Hupeh-Canton-Hankow and Szechuan-Hankow railway bureaux and abolish the railway school. This was on account of the strong opposition to the raising of foreign loans in connection with these railway projects. The government realized that the funds could not be raised locally but nevertheless would suspend the foreign loan plan to see what the agitators would do. As a result of the order Japanese engineers and instructors would be disengaged.
The Chinchow-Aigun Railway, the British Consul at Newchwang reported that this port would be enhanced by the construction of the proposed railway. The Chinese actually intended to make a Chinese fishing village called Hulutao, 35 mile SW of Chinchow, into a new ice-free harbour but the line would also benefit Newchwang.
Canton-Hankow Railway The Board of Communications had memorialized the Throne about the administration of this line.
Connecting The Kiangsu Railway with the SNR A report that the Board of Commun. were considering this.

August 1910
Money for the Tientsin-Pukow Railway, the Board had advised that profits of the IRNC would be appropriated to cover the cost of construction of the Northern Section until a supplementary loan could be arranged.
Railway from Kalgan to Jehol, the Viceroy of Chihli had raised 3,000,000 Taels for this line.
Kiangsi Railway, 16 miles between Kiukiang and Wanyiwan opened to traffic on 18 July.
The Kowloon-Canton Railway, the line was expected to open the following month. The purpose of opening this part of the line was to work up the local traffic and to transport material to the Chinese section. A description of the carriages to be employed on the British section is given. The railway would make do with temporary stations at Hunghom and Kowloon ferry until the Chinese line opened. The Chief Engineer, Lindsey had advocated eventually making the permanent terminus at Hunghom instead of Kowloon Point.
The Chinchow-Aigun Railway, it was reported that China would modify the original plans so that the line would go only as far as Taonanfu and thus remove the proposal outside the zone of Russian contention. It was not, however, be interpreted that China recognized Russia's claims.
The Yunnan-Kweichow Railway, apetition had been submitted to Peking seeking authorization for a loan for this proposed line.
Carriages for the Tientsin-Pukow Railway, Two 1st Class carriages had arrived at Taku and these would be put into service to Te Chow.
Southern Section, Tientsin-Pukow Railway, 100 miles of this line was expected to be completed by the end of the year. Bridges for 65 miles were finished and 45 miles of track laid. Two engines and 40 cars were engaged on construction at the Pukow end. The railway's rolling stock, according to J. Alston, in charge of the railway's shops, comprised 10 main line locomotives, 2 Baldwins and 8 North British Loco Co. There were also 2 Baldwins for

ballasting work as well as 4 locomotives bought from the Tongshan works. There were 100 high-sided wagons from Hurst, Neilson, Motherwell and 50 low-sided wagons from the Midland Railway Crriage Co, 50 from Belgium and 50 covered wagons also from England. In addition there were other wagons built at Tongshan. The total length of the line would be 236½ miles.
Honan-Tunkwan Railway, the survey of the first section of this line was complete and work had commenced at Loyang.

September 1910
The Chinchow-Aigun Railway A discussion on the political wranglings between China, Britain , Japan and Russia over construction of railways in this "Aigun" region (the historic name for the Heihe district of today's Heilongjiang)
South Shantung Railway A correspondent of the "Shanghai Mercury" describes the Yihsien coal line , known as the "Tsi-Tsao Railway" .
The Canton-Kowloon (British Section) Report that preparations were being made for the opening of this section in October.
Chinese Railway Program Report that Waiwupu (Foreign ministry) was anxious for the Yunnan-Szechuan, Szechuan-Tibet & Yunnan-Kuangzi railways to be constructed.
Excursions on the Peking-Kalgan Report that daily excursions would commence to the Nankou Pass for foreign tourists.
Tientsin-Pukow Supplies Tenders for a large supply of materials had been received.
Chinese Eastern Indemnity The Chinese Govt had remitted 160,000 Taels to the CER for lumber stolen by "Hunghutze" (nomadic bandits) on the Yalu (River).
Transiberian Schedule Reduced Twelve hours had been shaved off the new timetable effective in September, reducing the jouney to just over 8 days.
Purchasing Agent of the Tientsin-Pukow (Southern Sec.) Y.C. Tong had been appointed as agent.
Antung-Mukden Construction 53 miles of this new line would be opened in November.
Kalgan-Suryan Railway Construction was going to be "rushed" because of increasing Russian activity on Chinese borders.
Kaifeng-Hanchow Railway Report Peking had appointed Chao Wen-piao as engineer-in-chief of the Haichow-Chinking section.
Manchuria Railway Projects Report of "controvery" over the proposed Tetsurei-Kailiang railway.
Chinese Railway Revenue The Railway Bureau reported that only two of ten railways under their control had made profits .

October 1910
Formal Opening of the British Section of the Kowloon-Canton Railway, this six-page article reports the formal opening of the British Section of the KCR on 1st October by the Officer Administering the Government, Sir Henry May. He and the General Manager, E.S. Lindsay, in their speeches describe the historical background to the project and give detailed reasons for the heavy expenditure and delays incurred. It was also announced that the Chinese Section to Canton was expected to be opened by August 1911. The articles includes 8 photographs of construction scenes and the official opening ceremony. Also one sketch map of the KCR line including the Canton section.
The Canton-Hankow Railway, this article reports advice from Peking that negotiations for a foreign loan for the completion of this railway were far from concluded. Some commentators believed they would never be concluded

because of such strong resistance to foreign participation from the residents of Honan and Hupeh. Even the contracts for foreign engineers on the Kwangtung-Yuehan Railway were stated as unlikely to be renewed. Foreigners constantly criticized the Chinese in connection with railway construction methods and their direction. The Chinese in reply reminded the foreigners they were footing the bill and any delays incurred affected the Chinese more seriously than for the foreigners interested. There was certainly much lack of tact on the part of many westerners in dealing with Chinese officials. Western engineers tried to enforce their standards and expedite construction and had no patience with local disputes and native prejudice. Chinese railway engineers educated abroad were of the opinion that the anti-foreign feeling was due to the lack of consideration shown by the foreigners for Chinese customs which were in conflict with Western commercial ideas. This made co-operation difficult. The Peking Daily News reported that the question of foreign loans for industrial, commercial and railway development in China was one of the most burning problems with the Chinese at that time. The Hunanese were raising funds themselves and were determined to build the railways in their province themselves at any cost. The section of line from Tsuchow to Hsiangtau was to be opened to traffic on the 15th day of the 8th month and from Changsha to Tsuchow in the 11th month. If their cry of “Chinese capital only” went unheeded there would likely be disturbances all over Hunan. Commenting further on this, the Peking News expressed the opinion that foreign money should be welcomed for the development of railways but objected to it when it carried political designs which tended to the impairment of China’s sovereignty, when it meant that China had to pay double for what she needed, or received only half for what she sold! The Canton-Hankow Railway could be said to be divided into three parts: the section in Kwangtung Province controlled by the Kwangtung Yue-Han Railway Co. Ltd , the Honan section by the Honan Yueh-Han Railway Co and the Hupeh section by the Hupeh Yue-Han Railway Co. The Samshui branch was controlled equally by the three provinces by what was known as the Canton-Hankow Railway of the Three Provinces. The origin of this arrangement dated back to the American China Development Co. who in 1905 handed over the 30 mile completed branch to the Chinese. The latest reports on the Kwangtung section of the main line was that 60 miles of track were operating from Canton to Kau Wan Shek with about a further 10 miles of track north of here completed. Grading of the bed had also been finished for 110 miles to Yingtak. Large bridges were needed near Yingtak for further progress. This progress had been achieved under the direction of the current company president, Sir, Liang Chengtung. 16 small photographs of railway scenes on the Kwangtung section of the railway taken by J.S. Goodell, First Asst Engineer.

Hongkong And Her Railway An editorial about this new railway and prospects it would bring for trade and how Manila could be a competitor for South China trade "if it woke up" .

Proposals Invited- Tientsin-Pukow Railway (Southern sec) Tenders were being invited for the supply of railway passenger cars.

The Peking-Hankow Railway A further loan of £450,000 had been issued for this line.

China's Projected Railways Mr W.P Ker the British attache at Peking had issued a list of 21 projected railways including distances.

South Manchuria Railway The company had increased services to four trains weekly between Dairen and Changchun.

Chinese Bonds a A financal report that bonds had been issued in London for the recent loan of £450,000 for the Peking-Hankow Railway redemption.

Taotai Jeme Tien Yu's Appointment a Report bthat Jeme had accepted appointment as Director-General of the Canton-Hankow line.
The Chekiang Railway Trouble A report that the dismissal of Tang Shan-chien had caused friction between merchants and the Board of Communications.
The Central Railway Loan There were conflicting reports about the conclusions of the Canton-Hankow Railway loan.

November 1910

Proposals Invited Proposals Invited- Tientsin-Pukow Railway (Southern sec) (repeat of October edition) Tenders were being invited for the supply of railway passenger cars.
British Locomotives for the Shanghai Nanking Railway, a brief description of four locomotives built by Kerr, Stuart & Company of Stoke-on-Trent for this railway.
A.W. Pope General Manager of the Shanghai-Nanking Railway on Leave, a report that Pope was on trip to England, having travelled by the Trans-Siberian Route. He had earlier been presented with a silver bowl from railway staff by the Director-General Taotai Chung Mun Yew during a dinner with the Chinese Chamber of Commerce.
The Fukien Railway, the company expected to open the line to traffic from Amoy to the southern bank of the North River by Chinese New Year.
Another South China Line, reported a project under way to build a line from Chao Chowfu via Kit-yang Puning,,Huilai, Lufang, Hsiteng and Tanshui to connect with the Kowloon-Canton line at Shen-Chun. A Chinese company had been formed one year earlier and interest was being revived.
Chinese Eastern Railway, the budget for 1910 indicateda deficit of 550,000 Roubles but the prospects for 1911 were brighter.
Canton-Hankow Railway, the asst. director of the Peking-Mukden line, Mr. Hsi Si Tsung was to be transferred to Canton-Hankow Railway,
South Manchuria and Kirin-Changchun Railways, an agreement had been reached for providing a connection between the two lines.
Yunnan-Burma Railway, the idea of this railway was still being promoted.
Hukuang Railways, the Viceroy had proposed a circular railway to include Changsha, Chengte and Chengchou, one line from Chengte to Jungchen, another from Chengte to Hsiang-yang via Ichang and anothert from Ichang to Yunning.
South Manchuria Service, 4 trains per week from Dairen to Changchun were inaugurated in October. Trains left Dairen at 6pm arriving 9.55 the following day.
Hankow-Szechuan Railway Relieves Japanese Engineers, it was reported that the Japanese Chief Engineer, Hayashi had retired and there were no longer any Japanese engineers associated with line.
Profits of Canton-Hankow Branches, the Kwangtung division would receive 30% of the Samshui line profits. The largest profit for one year was $50,000.
Kirin-Changchun Construction, constructions trains were expected to begin operating on a 35 mile section from Changchun in April 1911.
Chekiang Railway, The Board of Communications had proposed taking over the shares of the company at a 30% discount but shareholders had objected.
Railway Loans, proposed alterations to the loan agreement for the Canton-Hankow Railway had been declined by foreign groups.

December 1910

The Canton-Hankow Railway, an account of a trip over this line from Canton for a distance of 58 miles. The fare was 2 Taels 1st Class and speed did not exceed 20mph. Many sections beyond this point had been worked on and it was hoped that the line to Yingtak would be open by early 1912. There were however considerable difficulties in a mountain gorge known as 'The Blind Boy's Pass'. After reaching Yingtak, Shiuchou would be the next target beyond which nothing had been done. The correspondent concluded with the remark that "some of us will be greyer still before we can get from Canton to Peking by rail".

Chinese Section of the Kowloon-Canton Railway, the opening of the first section of 30 miles from Canton to Tong Mei was celebrated December 5 by a special excursion over the line. Two 1st & 2nd Class combination coaches were pulled by a 101 ton North British Locomotive Works engine taking about one hour on the outward trip and returning at 40 mph on the return leg. Luncheon was served to the Chinese and British dignitaries. Construction of the 87 mile Chinese section began in 1908 and latest estimates of completion were July 1911.

The Kirin-Changchun Railway, a report that 7 miles of track had been laid from Changchun towards Kolunchieh. The first section was expected to open early in the new year.

The Heilungchang Railway, Tiehling had been selected by the Viceroy as the western terminus of the line on account of its proximity to the Liao River. The alternative of Kaiyun, 18 miles from Tiehling, would become a feeder of the SMR and divert traffic from Yinkou to Dairen.

Formosan Railway, A report frm the Governor-General about the railway

Advertisement for Baldwin Locomotives by China Agents, Arnold, Karberg & Co, with photo of 4-4-0 tender locomotive built for the Yueh Han Railway.

Advertisement for American Locomotive Company by China agents Mitsui & Company, with sketches locomotives built for South Africa, a 2-6-4 "six-coupled, double end" tank locomotive built for the South Manchurian Railway, a "Mogul" type 2-6-0 tender locomotive for the "Kwong-Tung" Yueh-Han Railway and an Atlantic Steam Shovel , one of two supplied to the SMR.

Advertisement for Imperial Railways of North China, full page advert for through services from Peking to Mukden connecting with the South Manchurian Express from the Trans-Siberian Route, to the Imperial Peking-Hankow Railway and to the "picturesque" Peking-Kalgan Railway. Photographs of Peking and Tientsin settlement stations. Further imformation to be obtained from Wagons-Lits, Thos Cook & Sons or IRNC.

January 1911

Advertisement for IRNC, repeat of that in December 1910 issue.

Advertisement for Baldwin Locomotives, repeat of that in December 1910 issue.

Advertisement for American Locomotive Company, repeat of that in December 1910 issue.

Advertisement for Peking-Hankow Line, this Chinese Imperial Railways advert for the "Road through the heart of China" advises travellers to use their weekly de luxe expresses to see China, leaving Peking on Tuesdays and Hankow on Fridays. Connections with Cheng-Tai Railway at Chengtingfu, with the Tao-Ching Line at Siu Siang-sien and at Chengchowfu with the Pienlo Line. 1 photograph of the Chien-Men of the Forbidden City.

Advertisement for Imperial Chinese Railways – The Tao-Ching Railway, also known as the Imperial Chinese Government Honan Line or the Pekin-Syndicate Railway this advert describes the line as "China's Road of

Anthracite" and The Pienlo Railway , from Kaifeng-fu to Honan-fu described as the "First Section of the Projected Central Trunk Line". Pictures of the coal mines on the Tao-Ching line and the Chung-Huan Temple at Kaifengfu.
Advertisement for Henschel & Sohn Locomotive Builders of Cassel, Germany, represented in China by General Agents: Carlowitz & Co. of Shanghai. 1 sketch of a small tender engine supplied to the Kiangsu Railway.
The Chekiang Railway, the removal of the president of this company had caused a storm of protest from the local people and the unrest was continuing with a call for the Hong Kong & Shanghai Banking Corp. loan agreement to be cancelled. The bank had been reluctant to hand over the money because efforts to ensure control of the money and construction methods had been frustrated by the local officials. Peking had pointed out to the company that had they co-operated with the Bank's agents (British syndicate) and allowed inspection of the accounts the money would have been paid. The company claimed that the only difference with the British syndicate was based on the "character of construction" and that the directors had never waived their right to use their own judgement as to the standard of construction.
Kaifeng-Tsingtao Extension, negotiations were in hand with German capitalists over extending the Kaifeng line to Tsingtao.
Tientsin-Pukow Railway, through trains from Tientsin to Taianfu were inaugurated on 20 December with all bridges completed except for the Yellow River bridge. The section between Tsinanfu and Taianfu was also celebrated by laying a stone at the Taianfu station near the foot of the sacred mountain Tai Shan.
Lienshan-Mukden Railway, a newspaper report that land had been acquired for a light railway from Lienshan to Mukden. It was doubtful, however, if the funds could be raised.
The Fukien Railway, the China Mail reported a new timetable in operation for the 12 miles in operation and work was being pushed on the next 10 miles up to the North River. From this point it was as yet uncertain on where the line would cross the river and additional funds were a problem. The Government was expected to eventually step in with a loan.
Shanghai-Hangchow-Ningpo Railway, there were rumours that the Government was contemplating taking over the Kiangsu section of this railway in the new year. This comprised about 40 miles of track at theShanghai end. Work in the meantime was proceeding slowly on Hangchow-Ningpo section, the contractors currently working on about 50 miles of track from Ningpo. The Government's taking over of the railway would put in on a sounder footing.
Peking Railway School, the school had been established for 9 years and accommodated 350 students. There were 32 teachers, mainly Chinese graduates of foreign schools, besides some foreign instructors.
South Manchurian Railway Company, the 7th half-yearly General Meeting of shareholders was held in Tokyo on 19th December and accounts presented. The Chairman also reported that reconstruction of the Antung-Mukden line was making good progress with the Antung-Chikuanshan section being opened to traffic in the near future.
Baikal-Peking Line, Russia and China were proposing to construct a line through the Gobi desert to Peking. The line would reduce the distance to Berlin by 600 miles.
The Kiangsi Railway, a report that traffic was about to be inaugurated on 26 December between Kiukiang and Huangtomen, a distance of about 20 miles.

February 1911

Winchow Railway Enterprise Short report of a 15-mile coal mine line being built from Fung Tauen (Fengchuan in Guangdong) to Sai Waan on West River 15 miles west of Wuchow (Wuzhou in Guangxi) .

French Railway Activity, French merchants were actively promoting the extension of the Yunnan line into Szechuan for the purpose of tapping the Yangtze region together with a line from Lungchow via Nanning to Wuchow to secure trade along the West River. It was also proposed that the Yunnan-Kueichow line should be built with either French or Chinese capital. These projects were proposed to further French interests.

The Fukien Railway, the company which provided a 12 mile service connecting Sing Su with Shih Bee, connecting with a ferry to Amoy, had commenced a three trains a day service since 1st January.

South Manchuria Railway Loan, the £6 million loan had been successfully floated in London in Janurary. Some of the money raised would be for the doubling of the track between Dairen and Sukiatun amongst other projects.

Mukden-Antung Construction, the railhead on standard gauge was advancing rapidly from Mukden and was expected to reach Penchihu on 15 January.

Shanghai-Nanking Railway Shops, a contract for the construction of 16 passenger cars for the Tientsin-Pukow line had been secured.

Teintsin-Pukow Railway (Southern Section), passenger traffic using 2nd and 3rd Class cars had begun temporarily on a 100 mile stretch to Linhankuan. Trains were also running on the north end of the section between Tsinanfu and Taianfu.

Hunan Railway Construction, the section between Changsa and Chuchow was reported completed with passenger traffic due to be inaugurated.

Sanning (Xinning) Railway Loan, a loan for 300,000 Taels had been arranged at 9% pa.

March 1911

The Antung-Mukden Railway, the Japan Mail reported that progress was 20% ahead of expectations and was completion was likely to be 6 months ahead of schedule. More than ⅔ of the Fuchinlin 2,400 yards tunnel had been excavated.

The Sunning Railway, The president of the company, Chin Kee Hee had advised that the extensions of this railway to Yeungkong in the west and Kongmoon and Fatshan in the east had good prospects with almost all the needed capital having been raised from Chinese in the USA. The line had been capitalized,planned ,engineered and constructed entirely by Chinese. If it had technical faults and was not run in accordance with foreign ideas it was nevertheless an effective and prosperous line and served as a standing example of what Chinese effort and talent would accomplish in China in the near future.

Paknam Railway Co Ltd., half year results published for period ending 31 December 1910.

Plague and Railway Traffic, the SMR had published an announcement about the outbreak of plague and 3rd Class Chinese passenger traffic had been temporarily suspended and no Chinese passengers were allowed to travel except those 1st Class passengers given special exemption by the Traffic Manager. Ist Class Chinese passengers arriving from Europe were also exempted from the rule and were permiited to join connecting trains. 1st and 2nd class Chinese passengers could travel with permission of the Station Masters but in separate cars. Chinese passengers joining the Korean railways were to be detained for 5 days at New Wiju. Imperial Railways of

North China had suspended passenger traffic from Mukden to Peking but not for passengers in the other direction.

April 1911

Passenger Coaches built by Hongkong & Whampoa Dock Co. for the Kowloon-Canton Railway One small photo in article about this Hong Kong dock company.

May 1911

China's Railway Tangle, this article describes the dilemma facing the Imperial Chinese Government over the discontent in the provinces, notably Hunan and Hupeh, about the use of foreign loans for the building of railways. The gentry of the latter provinces had threatened revolt if the foreign raised Hukwang loan was applied for the construction of the Canton-Hankow-Szechuan lines. The opposition was fearce and the government appeared powerless to impose its will. Events were moving rapidly and there were signs of troublous days ahead for the empire. China, in spite of her now centralized military control, was almost defenceless and at the mercy of other nations as well as facing the possibility of internal revolt, especially in the south. The Chinese government had either to make the Hunanese give guarantees of their ability to construct the railway or the government would have to impose its will by force. This editorial in fact almost predicts the start of the revolutionary overthrow of the Imperial Government. 3 photographs : of Wu Ting Fang, recent Minister to America; Liang Shih Yi, Director-General of Railways who had recently been removed from office and Taotai K.Y Kwong, former chief engineer of the Canton-Hankow line & just transferred to construct the Kaifeng-Haichow railway.

Imperial Kirin-Changchun Railway, in April an inauguration celebration was held for a 35 mile Changchun-Yingchengtsu section of this 85 mile railway. The Director-General and Japanese Engineer-in-Chief gave speeches of congratulation to the parties involved. The railway was a joint Japanese/Chinese financed project with the SMR providing half of the capital. The agreement provided for the chief engineer and chief accountant to be Japanese. The first locomotive put in commission on the line had been built at the Imperial Railways of North China shops at Tongshan with the Hanyang Iron Works supplying the rails. 6 photographs of administration building & station at Changchun, construction train, temporary wooden trestle, locomotive shed & storehouses.

Chinese Imperial Railways - Canton-Kowloon Railway – The Chinese Section, this 6 page article gives a detailed account of the construction and progress of this line. A 29 mile section had opened to public traffic on 6th December 1910. The Viceroy of Kwang Tung provinces officiated at the ceremonial opening with a trip to Tong Mei 24 miles from Canton on December 5th. The total length of the Chinese Section would be just over 89 miles with a loan agreement having been signed between the British & Chinese Corporation and the Imperial authorities in 1907. Surveys had started the same year with construction commencing in 1908. There was a Chinese Managing Director and a British Engineer-in-Chief & Chief Accountant. The staff in these and other senior positions were named. Construction work had faced many troubles caused by native opposition. Eventually with patience from the foreign staff and vigorous measures on the part of the Chinese authorities progress was made, particularly in the previous 12 months. The construction is described in detail with the methods of building 7 bridges. The 85 lbs per yard rails were from the Hanyang works and the hard-wood sleepers from New South Wales. 2-6-0 tender locomotives with outside cylinders 19" x 24"

stroke had been selected, built by the North British Locomotive Works of Glasgow. Eight carriages were currently in use. The bogies and frames had been supplied by Metropolitan Carriage & Wagon Co. with the bodies manufactured by Hongkong & Whampoa Dock Co. Ltd. A further 23 carriages had been ordered from the Tong Shan Works of IRNC. The Canton terminus at Tai Sha Tou had been completed and this was also used as a head office. The date of opening for through traffic to Hong Kong was expected to be in August 1911 unless something untoward occurred. The Engineer-in-Chief was according to the article deserving of much credit for overcoming the many difficulties encountered. Mr Grove on the date of the opening of the first section, said of the delay that one should not lose sight of the fact that owing to Chinese customs the rapid acquisition of land for the railway had presented Chinese officials with tremendous obstacles. There was the need to avoid disturbances from local villagers when dealing with the removal of graves and temples.19 photographs of officials (including F.Grove, Traffic Manager C.T. Liu & acting M.D. Taotai Chao Ching Hua) , stations, bridges and construction scenes.

Locomotives built for the Shanghai-Nanking Railway by Kerr Stuart & Co., A photograph of one of four Kerr Stuart 4-2-2 tender locomotives built for this railway. Includes a description with main dimensions and other specifications. The engines were built in record time with the orders placed on April12th 1909 and trials carried out on 8th & 11th June for the first two engines.

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China, Manchuria, Japan, Indo-China, Siam, Straits Settlements, Malay States, Burma, India, Malaysia, and the Philippines

THE FAR EASTERN REVIEW

VOL. VII.—No. 1. MANILA, SHANGHAI AND YOKOHAMA, JUNE, 1910. 50 Centavos Philippine Currency 25 Cents, U. S. C.

His Excellency HSU SHIH-CHANG,
PRESIDENT OF THE BOARD OF POSTS AND COMMUNICATIONS

Neutralization, Coercion or Extension in Manchuria.

The Surplus Funds of the Imperial Chinese Maritime Customs.

Railway Strategy in China.

Modern Japanese Steamers Built by the Mitsu Bishi Dockyard for the N. Y. K. and T. K. K.

Dynamic Flight.
(Continued)

ENGINEERING
COMMERCE & FINANCE

ment of Dalny, the embarrassing question relating to the life of the lease would be immediately raised. If Japan could give an assurance that the lease would be extended, backed up by the consent of the Chinese Government, she would have no difficulty in raising the necessary funds. And as the financial success of the South Manchuria Railway hinges on the terminal improvements, it is plain that Japan must receive some assurance from China that the lease will be extended, in order that she may go ahead with necessary financial negotiations to secure the funds.

It may also be accepted that China will never willingly consent to an extension of the lease, and will employ every subterfuge of diplomacy to delay giving an answer to Japan on such a vital question. Japan is in the position that she must know now, or at least in a year or so, whether China will consent to a renewal of the lease. This is vital to her interests. She must have China's official assurance, to be in a position to raise the funds necessary for the improvements at Dalny and Port Arthur.

A clash is inevitable. China will refuse and Japan must insist. Japan may agree to confine the lease extension to the ports and permit China to re-establish her authority over the rest of the peninsula. At all events a crisis will arise. Japan must be able to produce China's consent to the extension to secure funds for urgent improvements. In the event of China's emphatic refusal to consider the question, Japan will be blocked and baulked in her purpose. Will she accept such an answer as final, or will she resort to coercion?

The issue is not one to be decided twelve years hence: the solution must come now. It is the question of the day between the two nations.

In view of this situation, which might readily lead to serious complications between the two empires, and the effect it might have on other interests in the East, the proposal of the American Secretary of State to neutralize the Manchurian railways is not so much of a diplomatic blunder after all, nor does it have that air of grandiose simplicity that some people profess to see in it.

G. B. R.

THE CHINESE EASTERN RAILWAY

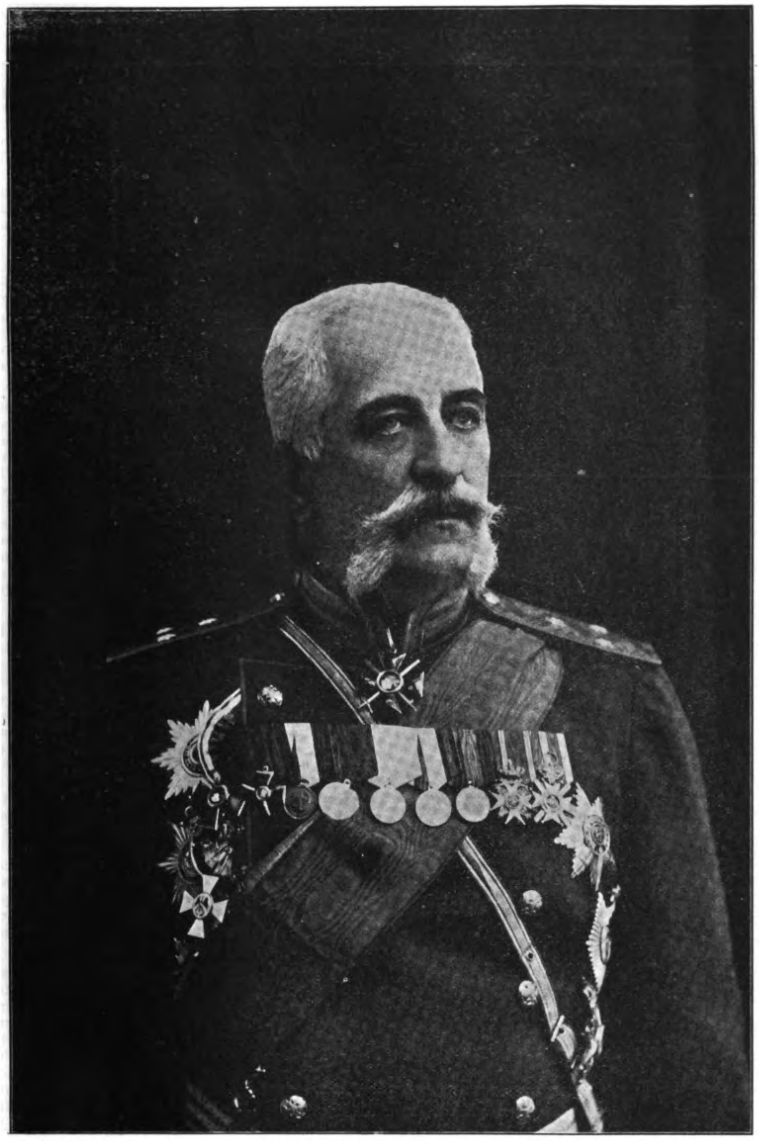
The following article from the *China Tribune*, a Japanese weekly published at Tientsin, sheds some further light on the leasing of Kwantung and the history of the financial affairs of the Chinese Eastern Railway:

"In 1896, Earl Li proceeded to Moscow for the purpose of assisting in the coronation ceremony of the Czar. Count Witte, who was waiting for the opportunity to obtain a remuneration from China for the services rendered by Russia in forcing Japan to return to China Liaotung Peninsula, skilfully managed to conclude a secret agreement with Li. Accordingly on August 27th, the same year, the contract concerning the establishment of the Chinese Eastern Railway Company, that is the Agreement to construct the said railway, was concluded between the Chinese Representative Hsu Ching Chen and the Representative of the Russo-Chinese Bank, to connect Chita on the Trans-Baikal Line with the Usuri Railway.

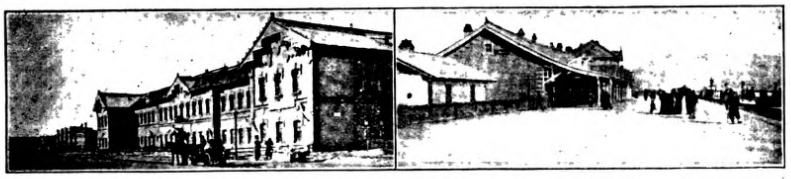
MAJOR GENERAL HOVARTH

CHIEF OF STAFF AND MANAGING DIRECTOR OF THE CHINESE EASTERN RAILWAY
THE DOMINANT FIGURE IN HARBIN

HARBIN: THE ADMINISTRATION BUILDING OF THE CHINESE EASTERN RAILWAY

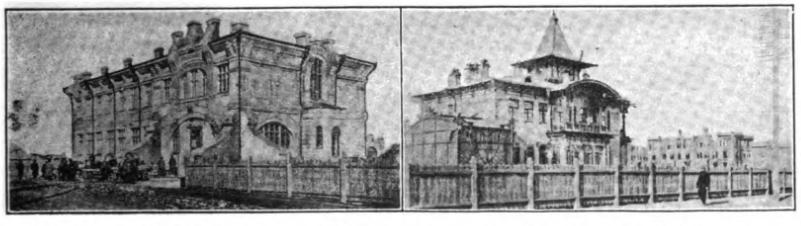


LIEUT. GENERAL TSCHITAGOFF
IN COMMAND OF THE RUSSIAN RAILWAY GUARDS IN MANCHURIA



HARBIN: HEADQUARTERS OF GENERAL STAFF FOR TRANS-AMUR DISTRICT

C. E. RY. STATION AT IMJANPO



HARBIN: CONSULATE GENERAL OF RUSSIA

HARBIN: OFFICIAL RESIDENCE

"In March, 1898, a part of the Russian Pacific Squadron, under the command of Admiral Dovbasoff, entered Port Arthur and hoisted the Russian flag upon the hill at the harbour entrance. On the 15th, Russia forced China to sign the Treaty of Leasing the Kuantung Territory, and even secured, on June 24th, the concession to build a railway line across South Manchuria. In 1899, the Regulations of the Chinese Eastern Railway Co. were sanctioned by the Russian Government, and through the above mentioned agreement of the leased territory, guaranteed by the Russian Minister of Finance, a railway extending for 1,600 miles from Manchuria in the north to Tairen and Port Arthur in the south and Pogranichinaya in the east was built by Russians through the Eastern Provinces of China.

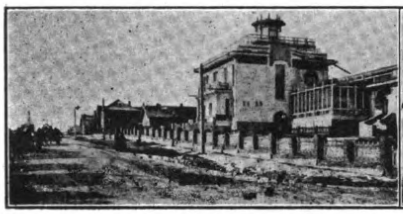
"In 1904, no sooner had the Eastern Railway been completed, the unfortunate war broke out between Russia and Japan, and as the result of the Portsmouth Treaty, the company lost the line southward from Kuanchengtze. In the autumn of 1906, the Usuri line, owned by the Russian Government, together with the railway running to the Sucheng Colliery, was let to the Chinese Eastern Railway Co. for a term of 25 years.

"Although the Chinese Eastern Railway Co. is legally a private corporation, in reality the railway is managed by the Russian Government. As it is, the capital is furnished from the National Treasury, and the line controlled by the Minister of Finance, receiving a large sum of money as subsidy from the Government every year. Unlike other government lines, however, the Chinese Eastern Railway does not receive any command from or intervention of the Minister of Communications, nor it is under the superintendence of the Board of Audit. Its management is left in the hands of the Head Office of the Railway Company at St. Petersburg, and its finance is controlled by the Minister of Finance through a special organ Audit Bureau of the Chinese Eastern Railway. In other words, the line is nothing but 'an enterprise undertaken by the Russian Minister of Finance, maintained in Chinese territory with the money disbursed from the National Treasury of Russia.'

"How much money did Russia spend for the construction and management of the Chinese Eastern Railway? We saw elsewhere stated that the sum paid out by the Russian Government amounts to four hundred million roubles, but accurate investigation reveals the fact that the sum expended for the railway really aggregatesthe fabulous amount of six hundred and sixty two million roubles in round figures, consisting of the following items:

1.	Unguaranteed Capital...Rbls.	5,000,000
2.	Bonds with the Guaranteed Interest of 4% (subscribed in 1897).....	15,000,000
3.	Bonds with 4% interest (subscribed in 1898-1904).....	351,000,000
4.	Interest at the time of construction, added to the capital.....	23,275,604
5.	Interest on the above.....	5,369,210
6.	Amount paid out during the Campaign, until 1909.....	98,451,000
7.	Damages incurred at the time of the Boxer Trouble.....	65,970,000
8.	Subsidies from 1906 till 1910..	97,351,000
	Total.....Rbls.	662,398,159

"Of the above, the fifteen million roubles mentioned in the Item Second were borrowed from the Russo-Chinese Bank. For the repayment of the same and the interest, 625,388 roubles are put down in the annual estimate. For the redemption of the bonds mentioned in the Item Third and the payment of the interest are stipulated by the Edict dated December 17th, 1901, but the amount to be thus paid out is not entered in the estimate, it being debited as a loan of the railway company against the National Treasury. If the company is unable to pay the capital and interest for the same, the National Treasury will pay 6% interest on it. The Items 4th and 5th are same as the 3rd, while the 6th, 7th, and 8th, bear no interest.



HARBIN: RESIDENCE OF LIEUT. GENERAL TSCHITAGOFF

HARBIN: KIRIN PROVINCIAL BUREAU, YAMEN OF TAOTAI SZE

H. E. SHIH SAO CHI

CUSTOMS TAOTAI AND CHIEF CHINESE AUTHORITY AT HARBIN.—GRADUATE OF CORNELL, 1901

"In five years, from 1906 to 1910, the amount the Russian Government disbursed (the amount for 1910 being the estimate) as subsidy for the Chinese Eastern Railway totalled ninety seven million roubles as previously stated. The following shows the annual disbursement in round figures: 1906, Rbls. 17,407,000; 1907, Rbls. 25,170,000; 1908, Rbls. 22,649,000; 1909, Rbls. 17,578,000; 1910, Rbls. 14,547,000, average per year being 19,472,000 roubles.

"It will be noticed that since 1907, the amount was gradually reduced, but still 14 million roubles are reckoned on during the current year, making the average annual expenditure in the last five years over 19 million. This expresses without saying much what a heavy burden the Russian Government is bearing on account of the Chinese Eastern Railway.

"When Russia built the Chinese Eastern Railway, which was commenced in 1898 and completed in 1903 spending four hundred million roubles, she was instigated by a certain ambition for political as well as economical matters in the Far East. The sum of about one hundred million roubles that she spent from 1904 to 1905 was for the transportation of troops and provisions in her supreme effort to crush down Japan during the disastrous campaign. But what object has the Government in having paid out 97 million roubles in subsidy in the last five years? What is she aiming at?

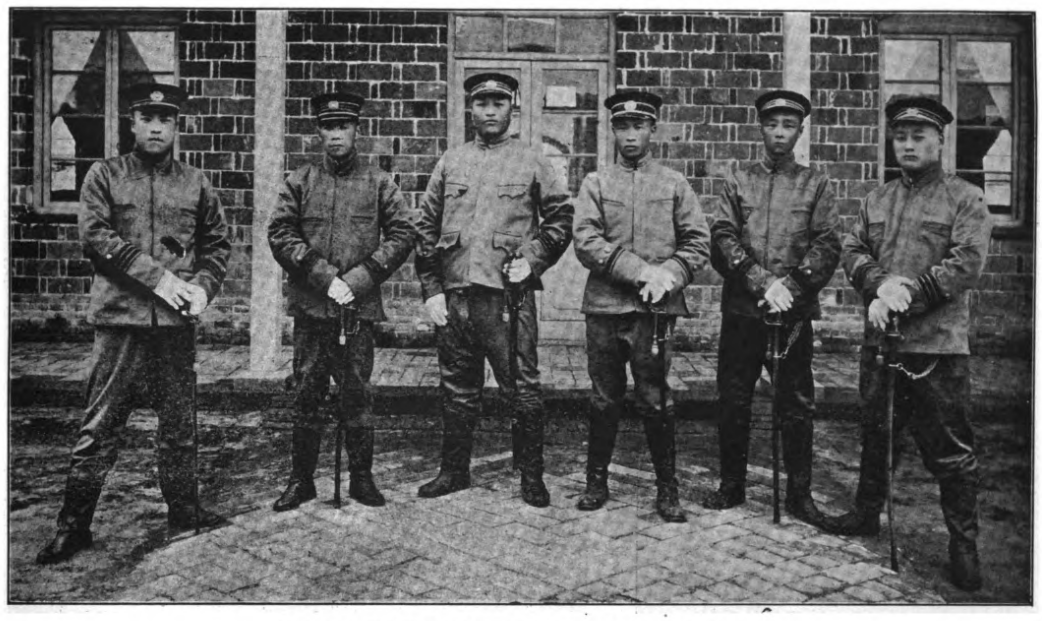
"The explanation is best furnished by the speech of Mr. Kokovtzoff at the Moscow Chamber of Commerce on his way to the Far East, last autumn. He stated, 'There was a time when the Chinese Eastern Railway was managed for political as well as commercial purposes, but at present there is only one object, commerce, for which we should work. To be more minute, (1) the Government intends to make the railway to serve as an organ of shipping Russian goods into North Manchuria, (2) to facilitate the transportation of Russian goods to Russian territories in the Far East and make the freight rate as cheap as possible, (3) to do its utmost for the importation of materials produced in China, which can be worked into marketable articles by Russian labour, and (4) to invite Chinese goods to be exported abroad to Vladivostock, so long as it does not harm Russia's interest.'

"No other object of running the Chinese Eastern Railway can exist beyond what the Minister specified; it is impossible to expect of this railroad anything which is outside of the commercial purpose. But when the fact that the railway company is losing 19 million roubles every year is observed, the actual condition of running it appears to be not in consonance with its object. Is this through unskilful management, or is it through the position of the railway being commercially disadvantageous?

"Let us first see how the railway company is managed. In doing so, it is necessary for us to examine the estimate of last year, before we proceed any farther.

"The main office of the Chinese Eastern Railway is at St. Petersburg, while the branch office is established at Harbin. The former is directly controlled by the Minister of Finance, and has about 300 assistants. Important questions are decided by the Directors, who

A TYPICAL STATION ON THE CHINESE EASTERN RAILWAY



OFFICERS OF THE MODERN DRILLED MANCHURIAN ARMY

number over 10. The Branch Office engages in transacting the actual business of railway administration under the instructions of the Head Office. Gen. Holwatt and about 2,000 officials compose the staff.

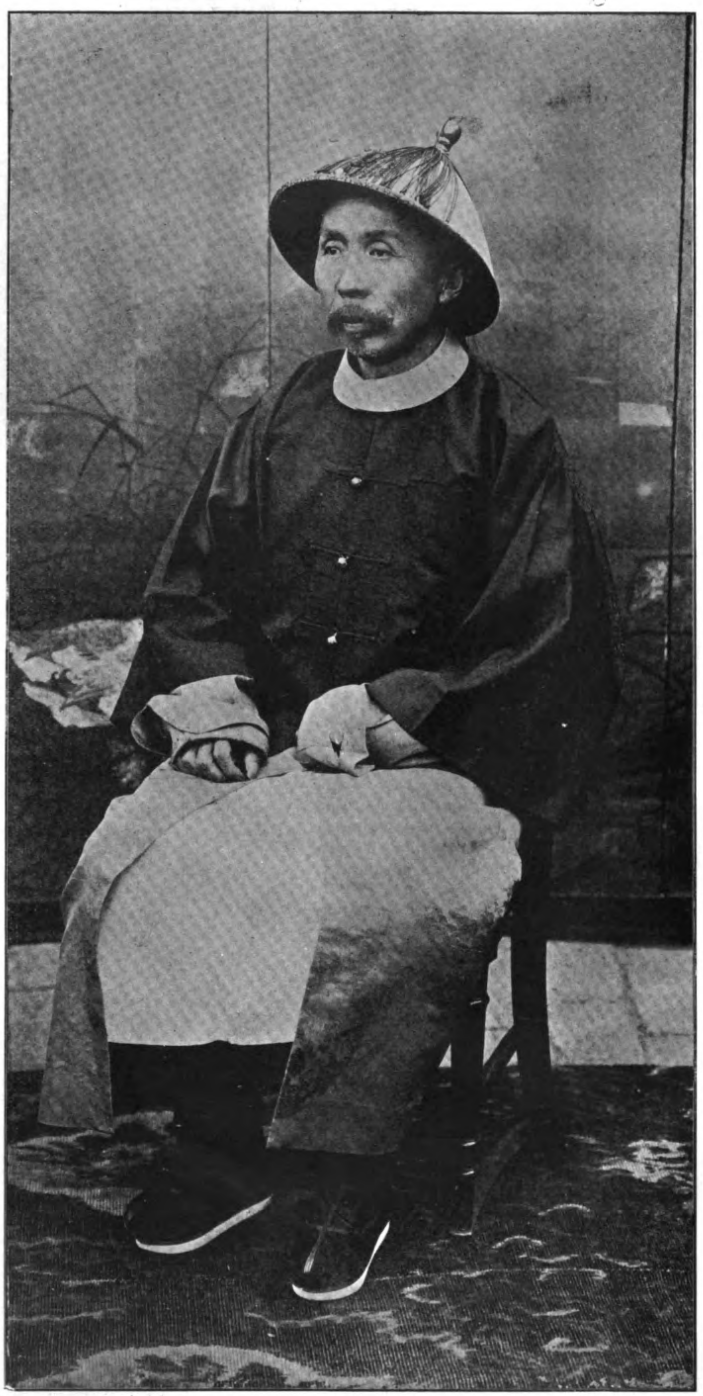
"The organization of both offices is similar to each other, but their authorities are widely different, the Branch Office having almost no power to carry out things without the instructions of the Main Office. But the latter, being established in a far-off place from the district where the railway exists, is not familiar with the actual conditions obtaining, and, therefore, the decision of the Directors is often found to be contrary to the actual interest of the railway. On the other hand, the Branch Office, being hampered by the Head Office, is unable to display enough activity. Thus, views are frequently expressed of late to remove the Main Office to Harbin as to be able to do away with the existing evils."

	Roubles.
1. Expenses at the Main Office, St. Petersburg	1,811,281
2. Expenses at the Branch Office, Harbin	1,837,337
3. Expenses for running goods and passenger cars	1,110,000
4. Expenses for Schools attached to the Railway	26,555
5. Expenses for Garrison Troops	9,828,000
6. Expenses for Civil Administration	1,522,260
7. Expenses for Courts	98,933
8. Expenses for Land Office	200,601
9. Expenses for Negotiation Bureau	231,668
10. Expenses for the Bureau of Line Preservation	3,621,037
11. Expenses for the Traffic Bureau	2,889,087
12. Expenses for the Bureau of Rolling Stocks	6,679,227
13. Miscellaneous Expenses	907,325
Total	30,763,011

H. E. CHENG-SHUN, DEPUTY MILITARY LIEUT.-GOVERNOR OF KIRIN

H. E. HSU SHIH-CHANG

FORMER VICEROY OF MANCHURIA IN THE UNIFORM OF COMMANDER-IN-CHIEF OF THE MANCHURIAN ARMY



H. E. CHAO EHR-HSUN

FORMER TARTAR GENERAL OF THE THREE EASTERN PROVINCES (MANCHURIA), NOW VICEROY OF SZECHUAN

RAILWAY STRATEGY IN CHINA.
THE KAIFENGFU-HAICHOW LINE

Shanghai, May 1st, 1910.—The Railway and Mining Concession exacted by Germany in her Kiaochow Convention with China stipulates in Article 1:—

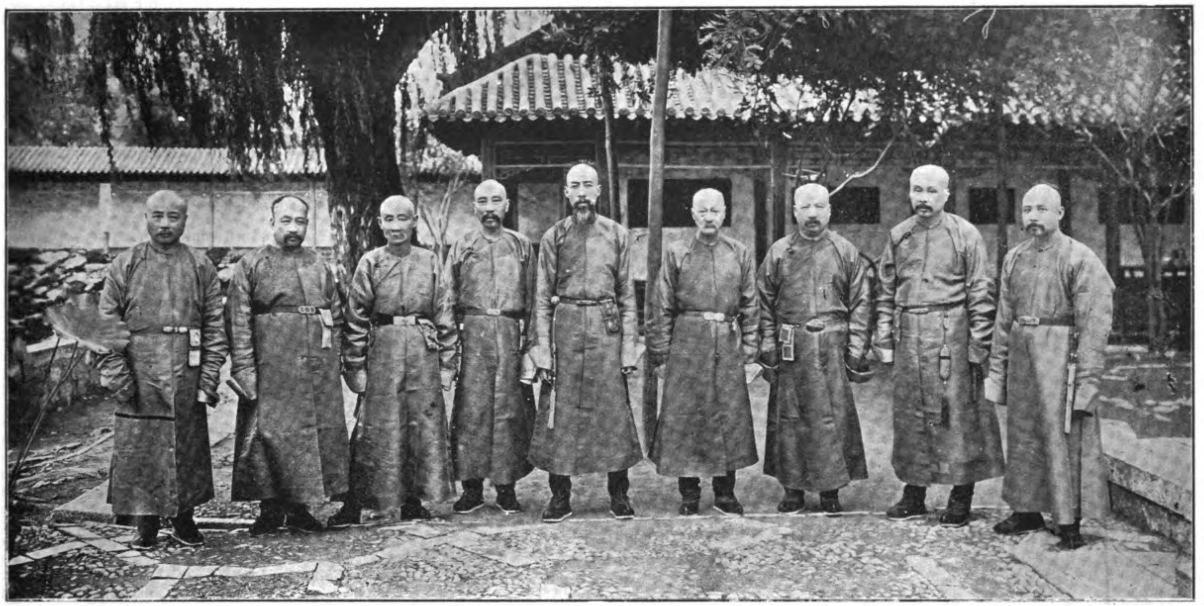
"The Chinese Government sanctions the construction by Germany of two lines of railway in Shantung. The first will run from Kiaochow and Tsinanfu to the boundary of Shantung province via Wei-Hsien, Tsinchow, Pashan, Tsechuen and Suiping. The second line will connect Kiaochow with Chinchow, whence an extension will be constructed to Tsinan through Laiwu-hsien. The construction of this extension shall not be begun until the first part of the line, the main line, is completed, in order to give the Chinese an opportunity of connecting this line in the most advantageous manner with their own railway system. What places the line from Tsinan-fu to the provincial boundary shall take in enroute is to be determined hereafter."

In Article 4 it is also stipulated that "if at any time the Chinese should form schemes for the development of Shantung, for the execution of which it is necessary to obtain foreign capital, the Chinese Government, or whatever Chinese may be interested in such schemes, shall, in the first instance, apply to German capitalists. Application shall also be made to German manufacturers for the necessary machinery and materials before the manufacturers of any other Power are approached."

German railway rights in China, as defined by the Kiaochow Convention, thus include the road between Tsingtau and the provincial capital at Tsinanfu, and another line from Kiaochow to the boundary via Ychowfu, and thence northwards via Laiwu-hsien to Tsinanfu making a complete triangle in the preferred sphere. The line from Tsingtau to Tsinanfu has been built and is operating successfully, and the inner leg of the triangle is under construction, forming part of the German section of the Tientsin-Pukow railway. The outer line from Kiaochow to Yhsien has been surveyed, and estimates of construction prepared, but no work has yet been attempted, and the right to construct it is held for some future date, when conditions are more favorable. Although the Kiaochow Convention granted to Germany the right to the line from Tsinanfu to Yhsien or Chiningfu to be constructed with her own capital and operated as a German line, this concession was subsequently waived in the negotiations leading up to the signing of the Tientsin-Pukow Railway Loan Agreement. In order to secure the Chinese Government's guarantee to the Loan, the German bankers surrendered to China their rights to own and operate the line.

German authorities unite in predicting a great future for their port of Tsingtau, as with the construction of new lines extending beyond Tsinanfu into the interior, trade will be attracted to the port, which in time, it is hoped, will prove a formidable rival to Tientsin and Hankow. To bring this about, the Germans have advocated the construction of two important railways, and have used their best endeavors with the Chinese government to grant them the concession. A link connecting the terminus of the Shantung Railway at Tsinanfu with some point on the Peking-Hankow line would prove of immense commercial value to the development of Tsingtau, and a line from Tehchow, in northwestern Shantung, to Chentingfu on the Pekin-Hankow line, has been recommended by Germany. This would place Tsingtau in a position to rival Tientsin as the port for the immense districts of Shansi and southern Chihli, and owing to the fact that Tientsin is ice-bound for 4 months of the year, it would enable the German port to make a direct bid for the trade of the country even up to Peking and beyond.

The German program also includes the construction of another similar line parting from the Tientsin-Pukow railway, somewhere in southwestern Shantung, probably at Yengchow, passing through Tsining on the Grand Canal, and Tsaochowfu to Kaifengfu, the capital city of Honan province. Here it would connect with the existing Peinlo or Kaifengfu-Honanfu Railway, which is to be extended westwards via Tungkwan to Sianfu, from whence at some future date will start the important Trans-Asian line via Lanchowfu to Ili and Kashgar. This would divert to Tsingtau the trade of Central China and especially the coal export traffic of Shansi. Either of these projects would materially increase the prosperity of the German Shantung Railway and develop the port of Tsingtau. So Germany is looking far into the future, and in building the Shantung Railway, the road bed was made wide enough for doubletracks, although only a single line is now operated.



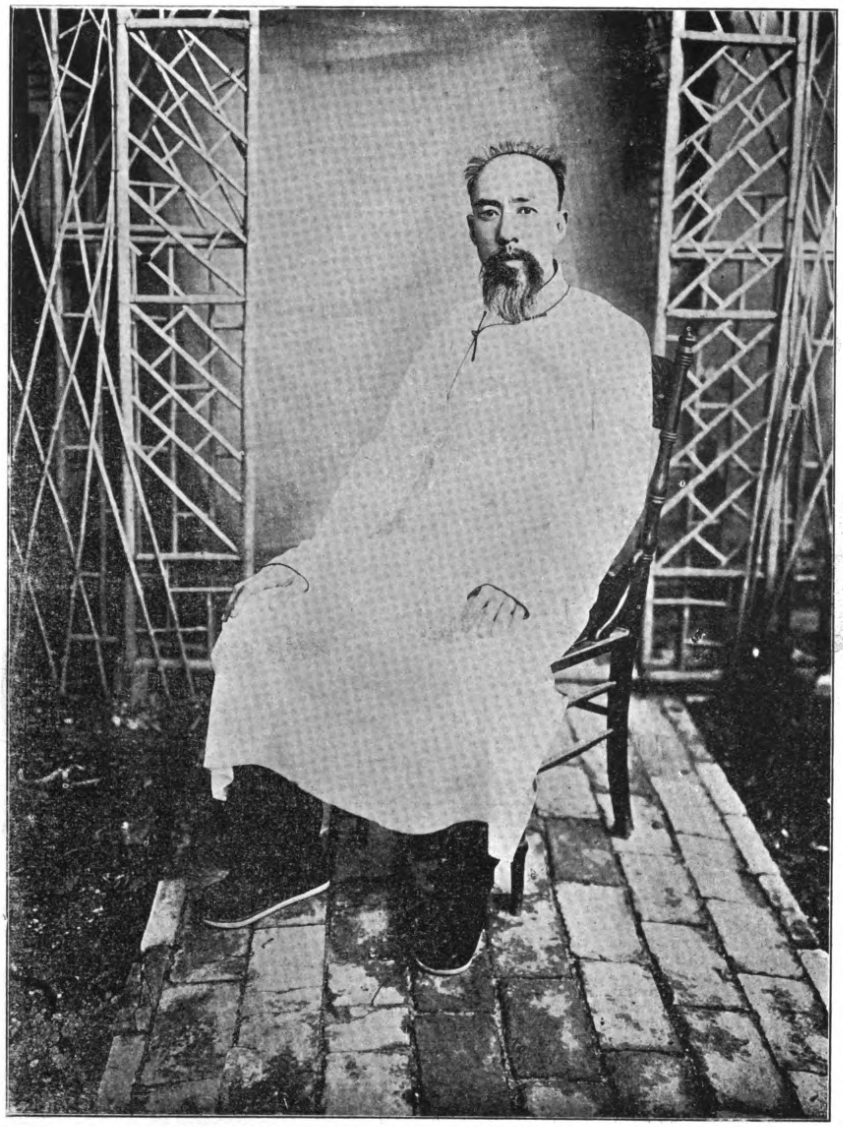
H. E. SUN PAO CHI, GOVERNOR OF SHANTUNG (IN CENTER), AND THE LEADING PROVINCIAL AUTHORITIES

To the many overtures on the part of Germany to build these two important links, China has responded in the negative, but has promised that if foreign capital is called on China will apply to Germany for the loan. So while the concession is withheld, these projects may be considered as coming within the sphere of future German railway loans in China. With the German position in relation to railway development in this section clearly outlined, we may now turn to another phase of the situation which also has an equally important bearing on the railway problem of Central China.

The original mining concession of the Pekin Syndicate, in Clause 17, stipulates:—

"Whenever it may be necessary for any mine to make roads, build bridges, open or deepen rivers or canals, or construct branch railways to connect with main lines or with water navigation to facilitate transport of Shansi coal, iron and all other mineral products from the province, the Syndicate on reporting to the Government of Shansi is authorized to proceed with the works, using its own capital without asking for Government funds.

This clause was held on the part of the Peking Syndicate to cede to them the right to build a railway from the mines in Shansi, to tidewater. Their original scheme was to strike southwards towards Siangyang situated at the head of navigation on the Han River, thus finding a short outlet to the Yangtsze, but this was finally abandoned in favor of a route from the mines across 350 miles of country to the Yangtsze at Pukow. Their somewhat indefinite railway rights, which have been recognized by the Chinese Government, were afterwards merged with the concessions of the British and Chinese Corpora-



HIS EXCELLENCY, SUN PAO-CHI, GOVERNOR OF SHANTUNG PROVINCE; MINISTER TO FRANCE, 1902; CHIEF SECRETARY OF THE GOVERNMENT COUNCIL, 1906; GOVERNOR OF PEKING, AUTUMN, 1906; MINISTER TO GERMANY, 1907; PROMOTED TO PRESENT POST 1909.

tion, which comprised the southern half of the Tientsin-Pukow Railway and a future line from Pukow to Singyang on the Peking-Hankow line. While the plan of the Peking Syndicate to build a road from the mines to Pukow has been abandoned owing to the combination with the British and Chinese Corporation, the route has been modified to join the Tientsin-Pukow railway at some point further north. No definite information on this subject is available, but in order to avoid a conflict with the established rights of the British and Chinese Corporation it is probable the Peking Syndicate claim will embrace a route from the mines terminating at some point on the Tientsin-Pukow Line, further north than the Pukow-Singyang project. Such a line would, therefore, pass through Kaifengfu and join the Tientsin-Pukow Line at Suchowfu or Suchowan. As the Pekin Syndicate still holds these railway rights as a valuable asset, it can be readily recognized that their sclaim must be clearly faced by the Chinese Government at some future date. The extension of the existing Pekin-Syndicate or Tao-Ching Railway, through Kaifengfu to any point on the British section of the Tientsin-Pukow line, would tend to divert the traffic of Honan and Shansi to the deep water outlet at Pukow. Such a line must materially weaken the value of the Pukow-Singyang concession held by the same syndicate. The success of the German program is undoubtedly the greatest menace to the profitable operation of these British lines, as the Kaifeng-Yengchow extension would place Tsingtau in a most favorable position to compete with them for traffic in the same districts. So it is clear that the questions involved in any railway extensions, connecting the Peking-Hankow and Tientsin-Pukow trunk lines, are vastly important to British and German interests. The future of Tsingtau as a great port hinges on whether Germany can secure a western extension to her railways in Shantung, and the rights of the Pekin Syndicate and the British and Chinese Corporation are affected by any move tending to favor the German program.

China undoubtedly appreciates the situation and is determined to avoid future complications. First and foremost her own interests demand attention, and the question of an open port on the North China coast under her exclusive administration is a paramount issue with her government. For it is a significant fact that China has been deprived of all the valuable ports situated on the northern stretch of her coast. Shanghai, the great commercial center of the Empire, is ruled by an International Council, and the central government has no control over its affairs. Tsingtau is held by Germany, Weihaiwei by Great Britain, Dairen and Port Arthur by Japan; this leaves to China the outlets at Newchwang, Tientsin and Chefoo. Newchwang as a port is worthless. Eighty years ago the spot on which Yinkow now stands was at the bottom of the sea, and it is now twenty miles inland from the mouth of the Liao River. The encroachment of the land on the Liao-Gulf is going on so rapidly that any port at the mouth of a river can never be depended on as a permanent outlet for trade. In addition, the Liao River at Newchwang is frozen over for at least four months of the year, and all commerce is checked until the thaw, and then only shallow draft coasting vessels can reach the town.

Chinwangtao is an artificial ice free port owned and operated by the Chinese Engineering & Mining Company. Tientsin which ought to be the great port for North China is handicapped by the same disadvantages as Newchwang, and any scheme of improvement embracing a large expenditure is only a waste of money. The silt carried down by the Haiho is so great that constant dredging is necessary to keep a channel open for light draft steamers. Large vessels have to lie off shore as far as nine to ten miles, so Tientsin as a port can never figure in any important scheme for the development of the Empire, or the advancement of a national policy.

There remains Chefoo which might be made a great Chinese port, but while the depth of water is ample, the harbor is open to the heavy northern gales, and a breakwater is imperative to make it safe for vessels during the winter season. But at the best, even after a large expenditure of money on improvement schemes, the harbor of Chefoo could only accommodate a very limited number of vessels. Chefoo's prominence as a port has rapidly declined since the opening of Tsingtau and the construction of the Shantung Railway. The trade of the province, which once flowed through Chefoo, has been diverted to Tsingtau, and the only hope of the port is the building of a railway which will terminate at some point on the existing Shantung Railway. It is quite clear that such a road would menace the prosperity of Tsingtau, and diminish the through traffic of the German line, and as it conflicts with German interests, must meet with their disapproval. Chinese promoters have several times endeavored to raise the funds to construct this line from Chefoo to Wei-hsien, but up to date have been unsuccessful. Under the terms of the Kiaochow Convention, if the Chinese desire foreign capital to develop the province, they must turn to Germany, and in view of the menace to her own interests, it is quite natural that she would withhold financial assistance to such a scheme. While the Chinese are free to apply elsewhere for aid in the event of German refusal, such action on their part would undoubtedly result in complications. The Chinese have gone so far as to openly state that German officials are decidedly opposed to the construction of this line and have threatened to use their power at Peking to break any official who encourages the scheme. This statement, however, is apparently without foundation, and must be accepted for what it is worth. The real difficulty in the execution of the scheme is the failure on the part of the Chinese to raise the funds themselves. At all events, Chefoo could never enter into any plan of the Chinese Government of building up a port under its own

RAILWAY MAP ILLUSTRATING RAILWAY STRATEGY IN CHINA.

GOVERNOR SEM PAO-CHI AND CHIEF PROVINCIAL OFFICIALS OF SHANTUNG AT A RECEPTION GIVEN BY THE GERMAN CONSUL AT TSINANFU

control, for as long as the Kiaochow Convention holds good, the proposed railway line will only have a local importance, and would be useless to China in the advancement of any broad national policy for the development of the Empire.

Weihaiwei, leased to Great Britain, has no future as a trade port. So it is quite clear that China is at present deprived of the only really good harbor on the Northern coast through which she could divert the great trade of the Central provinces. Japan holds the best habors for the outlet of Manchurian trade, and Germany occupies the port of Tsingtau, commanding the desirable trade routes from the sea to the great central provinces. If foreign railway programs are permitted full scope to develop, the logical sequence is that China will be forever barred from controlling a suitable deep water base for the furtherance of her own policy.

The situation outlined above is naturally one of vital importance to China, and it is interesting to note how she has solved the problem. Her move in the game, only recently announced to the world, is one of the most masterful pieces of political railway strategy yet recorded. By one simple line she effectively blocks the German program, nullifies the value of the British claims and opens for herself a port which will be under her own control. The deep significance of her move has apparently been lost sight of, in the general attention devoted to the Chinchow-Aigun project.

Some months ago, it was reported that the Chinese Government had opened the port of Haichow, a hitherto insignificant port in the north-eastern coast of Kiangsu Province just south of the Shantung border. This report, however, lacks official confirmation. The reason for such a step is now made clear by the imperial sanction to a scheme for building a railway from Kaifengfu, through Suchowfu, Tsingkiangfu and thence to Haichow.

Under date of March 8th, 1910, the Board of Communications memorialized the Throne on a railway project between Kaifengfu in Honan and Haichow, a seaport in the northern corner of the Province of Kiangsu.

According to the Memorial, the importance of this railway having been recognized by the Chinese Government, surveyors were despatched last spring to decide on the route to be adopted. The result of the survey was in favor of an early construction of the line, in view of the various advantages to be derived from the scheme.

Between Kaifeng and Suchow two routes were considered. One reaches Hsuchow via Chenliu, Kihsien, and Tangshan, while the other runs via Lanfeng, Kaocheng and Liukow, and along the old course of the Yellow River to Suchow. The latter, or northern line, running through a flat country, the cost of its construction will be less than the other route. But the southern line has the advantage of connecting the flourishing towns in the Province, and from the political and military point of view it is of more importance. It has, therefore, been decided to adopt this line. From Suchow there are three candidate lines to reach Haichow. The first is a straight line running eastwards via Peichow. The second is a line running in curve southeast to Hsuchien, thence turning to the north-east to make Haichow. The third line runs via Hsuchien to Chinkiang, from which place it turns northwards to reach Haichow. Of these three lines, the first is the shortest and least expensive one, but the construction of the Suchow-Chinkiang section having already been granted to the Kiangsu Railway Company, it is recommended that the third route should be adopted.

The cost of construction estimated, and the distances of each section are given below.

Kaifeng to Suchow, 560 li.....	Tls. 6,700,000
Suchow to Chinkiang (this section to be built by the Kiangsu Railway Co.)	
Chingkiang to Haichow, 250 li..	3,000,000
Extension to the beach and harbor improvement at Haichow.....	2,800,000

Besides the above, there will be other minor items to be counted, and the total expense will amount to about 14 million taels, which, when compared with the other railways in China, is considered cheap, while the profits to be derived from this line will come next to the Peking-Mukden and Peking-Hankow railways.

Although the necessity of commencing the work as soon as possible is keenly felt by the Chinese Government, it is no easy matter for them to raise the funds required, without resorting to a foreign loan, which China does not desire at present. The surplus profits of the Peking-Mukden and Peking-Hankow railways having already been appropriated to the construction of the Kalgan-Kaihuacheng, Kirin-Changchun, Cheng-Tai, Taa-Ching, Pien-Lo and Shanghai-Ningpo lines, and other sources of income being also inadequate to meet with the fresh outlay of 14 million taels, the Board recommends that the work should be spread over several years, commencing it from more important sections of the line with such funds as are available for each year. By this means it is hoped to avoid any undue pressure being likely brought upon the financial resources of the Empire.

A glance at the map will show that the new line just keeps outside the German sphere of preferred rights in Shantung, so that opposition from that source cannot be fairly advanced, and its construction will effectively checkmate the German project to build a line from Yenchow to Kaifengfu. The map will also show that the new line, by connecting Kaifengfu with the Tientsin-Pukow at Suchowfu, obviates the necessity of the Peking Syndicate to extend its road in that direction, and in a measure it decreases the importance of the Pukow-Singyang project.

The new road will virtually be an extension of the existing Peinlo Railway, and will in time form the Eastern Division of the great Asian trunk line to Ili and Kashgar. The great volume of traffic from these regions, and from districts served by intersecting lines, will then be diverted to the new Chinese port of Haichow. With the connecting railways owned and operated by the Chinese Government, through rates can be made, which will draw the traffic to the new line and develop the new port The German dream of a greater Tsingtau is somewhat dispelled when the future of Haichow is thoughtfully considered.

China naturally advances the legitimate argument that the line is of immense advantage from a military and commercial viewpoint. In fact, she does not have to offer explanations as to her reasons for building the line, as it does not conflict with the treaty rights of other powers. The districts traversed by the line are the poorest and most desolate in China, subjected to periodical floods, which cause great damage to crops and originate famines and pestilence. Recent reports from Haichow state that famine is again upon the land, and thousands are dying of starvation and disease. A repetition of the great famine of 1906-07 seems imminent, and relief measures have been initiated by the provincial authorities. The proposed railway will enable the Government to ameliorate these conditions in the future, and provide work for thousands of wretched creatures, who must otherwise starve. So, hand in hand, politics and humanity are guiding the imperial authorities in the construction of the new line.

One of the most significant features of this move on the part of China is revealed by a close study of the map. From Chinkiang northwards to Haichow by the Grand Canal to Tsingkianfu is approximately 90 miles, and from here to the new port of Haichow via the proposed railway or the Yen river another 80 miles, or a total of 170 miles. The distance from Chinkiang to Shanghai via Woosung is about 160 miles or for all practical purposes the same. This really places Haichow in direct competition with Shanghai for the great Yangtsze River junk traffic, which carries no small portion of the products for export.

China has moved and cries checkmate to Britain and Germany. The game has been played fairly and above board, and the world will await with interest the next move on the part of Britain and Germany to regain their lost ground.—G. B. R.

Editorial Note.—Since Mr. Rea wrote the foregoing, the following paragraphs have appeared in the Chinese daily papers which point to the fact that China will not be permitted to build the road without protest from British and German interests. The same principle underlying the Chinchow-Aigun railway applies with equal force to the Kaifeng-Haichow Project.

The *North China Daily News* of May 12, 1910, says:

"It is reported that a loan of Tls. 1,800,000 will be obtained from the United States to build a railway from Kaifeng-fu to Chang-Chow, and Tls. 10,000,000 will be loaned from the British and Chinese Corporation for the same purpose."

From the *North China Daily News* of May 13, 1910:

"Negotiations are now proceeding between the Yuch'uanpu and a foreign syndicate for a loan of Tls. 20,000,000 to build a railway from Kaifengfu to Tsinanfu, but the bargain was not concluded as the Yuch'uanpu refused the syndicate's request that the line should be pledged as a guarantee of repayment."

From the *North China Daily News* of May 14, 1910:

"A report says that, as the French intend to invest capital in building a railway from Hsuchou to Haichou, the Germans oppose the proposition, as it is regarded as affecting German interests."

On April 26th, the Japanese paper at Dairen published the following telegram:

"Peking, April 26.—The Sino-American Syndicate has agreed to advance a loan of Taels 18,000,000 for the construction of the Kaifeng-Haichow Railway project."

As the Japanese have a peculiar way of securing accurate information of the inner workings of Pekin politics, long before other foreigners, it may be accepted that their news of April 26 was correct. If the latter news is also true, it indicates that British interests immediately entered the field for participation, and the second item also tells us that Germany, alive to the menace to her position, immediately proposed her old pet scheme of a line from Kaifeng to Tsinanfu, which would obviate the Chinese project. The last item of the 14th tells us that Germany has protested against the use of any foreign capital in the region of Shantung, although the proposed line is outside her recognized railway sphere. And here we have a repetition of the Chinchow-Aigun embroglio, with the European powers refusing to recognize China's right to build a railway in her country without their consent. How long will it continue?

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FAR EASTERN RAILWAY NEWS

JAPANESE RAILWAYS.—The announcement is made that during the present year it is expected to complete a total of 192 miles of line which, in addition to the 6731 miles in operation at the end of 1909, will bring the mileage up to 6923. The program for 1911 represents 237 miles of construction. The following is the table of the construction for the present year:

	Mileage	Date.
Hokkaido Line	31.09	Sept.
Hokkaido Line	48.08	"
Gwan-Etsu Line	10.56	Oct.
Central East Line	7.53	"
Central West Line	7.11	"
Maizuru Line	26.07	Sept.
Sanyin East	4.77	Oct.
Sanying West Line	11.31	May
Sanyin West Line	2.41	"
Sanyin West Line	7.18	Oct.
Toyama Line	14.67	April
Uno Line	20.37	May
Total	192.10	

And the program for the period commencing January 1st, 1911, is given by the *Financial and Economic Monthly* as follows:

Lines	Running Mileage	Construction Expenses	
	mile	*yen*	*yen*
Hokuetsu	15.69	2,218,197	139,860
Kyushu	48.69	8,430,528	172,757
Bo-So	46.43	6,442,916	138,438
O-U	92.16	14,984,457	162,521
Hokkaido Sorachi Coast	36.68	5,040,860	136,754
Kyushu	32.20	7,188,472	222,898

JAPANESE RAILWAY PLANT.—The program of the Railway Board includes the construction of a large plant for the manufacture of general railway supplies at Omori. The site will cover an area of about 60,000 square yards, and have three times the capacity of the plant at Shimbashi. The machinery from the latter will be transferred to the new plant and an addition of modern machinery will be added.

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bid on Japanese Ochi was Manila ₱9.14, Iloilo and Cebu, ₱10.73, all other ports ₱12.74. Smith Bell & Co. bid on Australian Seaham as follows: Manila ₱10.94, Iloilo ₱12.035, Cebu ₱12.06, Jolo, Tacloban and Romblon ₱13.13, Balabac and P. Princesa ₱28.44, Zamboanga ₱14.93. Mitsui Bussan Kaisha bid on Japanese Tagawa, Manila ₱10.65, Iloilo ₱12.50, Cebu ₱12.10, Jolo ₱13.80, Tacloban and Romblon ₱12.70, Balabac, Puerto Princesa and Zamboanga ₱13.10. T. Figueras bid on Australian Pacific, Manila ₱10.45, Iloilo and Cebu, ₱11.15, all other ports ₱11.25. Ker & Co. bid on Mount Kemblar, Osborn, Mount Pleasant, Wallsend. Metropolitan and Coal Cliff as follows: Manila ₱10.06, Iloilo and Cebu ₱11.16, Jolo, Tacloban and Romblon ₱13.395. No bid on other ports. Messrs. Behn, Meyer & Co., Ltd., bid on Lauban coal as follows: Manila ₱8.83, Iloilo ₱9.53, Cebu ₱9.33, all other ports ₱9.63.

PROPOSALS FOR FIRE HOSE.—SHANGHAI MUNICIPALITY.—Bids opened, July 16.

2,000 ft. 2½ in. Double Jacket Cotton Para Rubber lined Fire Hose in 50 ft. Lengths, uncoupled.

2,025 ft. 2½ in. Flax Machine-made, Canvas, Unlined, Fire Hose in 75 ft. Lengths, coupled; couplings to be expansion ring pattern, gunmetal, V right hand threads, 5 threads per inch, 3¼ in. ext. dia. and to be provided with two lugs ¾ in. dia., ⅞ in. length.

PROPOSALS FOR 10,000 CUBIC FEET OF TEAK.—Bureau of Supply, Manila. Bids opened July 20. Dimensions must not be less than 14" square and 16' long.

THE ANTUNG-MUKDEN RECONSTRUCTION.—It is expected that over fifty miles between Antung and Chihkwanshan will be completed and in operation by October this year. The broad gauge has been laid for 25 miles between Mukden Shihchiaotsu. The material is secured from the mountains for grading and brickyards are established along the right of way. The work on the tunnels, the most difficult part of the construction, is being pressed. There are 25 in all aggregating about 9,000 yards. Of this length about 8,000 yards, including the Taling tunnel, have been completed. The construction of the Antung-Mukden line, says a Japanese exchange, is to be completed by August 1911, and the Yalu bridge is also to be finished within next year. When Mukden and Fusan are thus linked, not only will the line become a highway for traffic between Japan and Russia, but a new way will be opened to Peking by connecting the line with the Peking Mukden road. By the Fusan-Mukden road, Mukden will be reached in 43 hours from Moji, against 60 *via* Dairen, where also a further delay may occur in making the connection between steamer and train. Moreover, it is only natural that people should prefer to travel by rail than by steamer.

INTERNATIONAL THROUGH TRAFFIC AGREEMENT.—The South Manchurian Railway has been advised of the conclusion of the conference between the Russian and the Japanese representatives and has announced the result as follows: With regard to through freight the principles adopted were along the lines of the Berne convention with such modifications as conditions in Manchuria required. That the traffic should be organized by combining the prevailing tariffs of the South Manchuria and the Chinese Eastern Railway, and that special rates should be allowed only on timber, flour, spirits, cement, butter, and salt fish from the Chinese Eastern Railway and coal, cement, vegetables, fruit and fresh fish from the South Manchuria Railway.

THE TIEHLING-HAILUNGCHENG RAILWAY.—Preliminary surveys are being made by a Chinese engineer for this line which, when completed, will serve the region now tapped by the Sungari River and secure a large share of the trade that now goes by way of Kirin. The line will tap Kuanchieh and Menhkiang, situated on the upper reaches of the Sungari and Panshihhsien, Chaoyangchen, Liuhohsien, Taolu, and Utung, all situated on the Huifa and Itung Rivers.

HONGKONG-CANTON RAILWAY.—There is every indication that the line to the Kowloon boundary will be completed by July 1st. The Chinese section will be greatly expedited by the facilities provided by the British section when completed for the carrying of materials, etc., for construction work from the Kowloon end. It is expected that the Chinese section will not be completed until about August 1911.

THE CANTON-MACAO RAILWAY.—The announcement is made from Peking that the Portuguese Minister has again opened the question of completing this line. It will be remembered that an attempt was made recently to secure permission to complete the line with Chinese and Portuguese capital. It is understood that the proposal is now meeting with favor.

THE YUNNANFU RAILWAY.—The *Avenir du Tonkin*, commenting on the disappointment of Haiphong in the small increase of traffic following the opening of this important road, declared that the high rates charged by the company are responsible.

HARBIN-HSUI HUA-HAI LUN RAILWAY.—Advices from Harbin are to the effect that the National Communication Bank and the Kwang Hsing Co. have expressed their willingness to finance the construction of a line of light railway to cost Tls. 5,000,000. The line will be 150 miles in length and serve to carry cereals to the interior of Mongolia as well as to tap the wealth of that region.

SOUTH MANCHURIA RAILWAY RECEIPTS.—Passenger receipts for April this year amounted to yen 337,277 and freight yen 753,678, a decrease of yen 126,900 compared with the returns for the corresponding term, 1909.

THE INTER-INDO-CEYLON RAILWAY.—This enterprise which is to place Ceylon in connection with India is to receive attention this year. An appropriation of £300,000 has been made, of which one-third will be spent this year. The sum of £100,000 will be expended in the completion of the Pampam Viaduct and the bridge joining the island of Rameswaram and Mandapam.

THE LOKYANG-TUNGKWAN RAILWAY FINANCE.—A report from Peking is to the effect that Mr. Straight has arranged to take up the loan for Tls. 5,000,000 to finance this line. It will be remembered that recently arrangements were practically concluded with the Kungyi Bank for the latter to advance the sum needed. It has been announced that the latter's inability to raise the money is responsible for the negotiations towards an American loan.

NEW LOCOMOTIVES FOR THE SHANGHAI-NANKING LINE.—According to the *N. C. Daily News*, the management of the Shanghai-Nanking Railway has placed an order for four express passenger tender locomotives of the 4-2-2 and 6 type with Messrs. Kerr, Stuart & Co., Ltd., of the California Works, Stoke-on-Trent, who established an office here in March last. The contract means a record in construction, as two of the engines have to be completed in forty-five days. But for a few minor details, these engines are identical with the famous single-driver locomotives of the Midland Railway, which are booked to do the journey between London and Nottingham at an average speed of 52.5 miles per hour, and whose actual running speed ranges from 52.8 to 55.68 miles per hour with a load of upwards of 200 tons. As there are no steep gradients on the Shanghai-Nanking Railway, such as exist on the Midland Railway, the engines now on order are expected to give even better results than those mentioned above. Messrs. Kerr, Stuart & Co. have received a similar order from the Chekiang Railway for engines of the 4-4-0 and 6 type.

PROFITS OF CHINESE RAILWAYS.—The net profits for the year 1909, according to the correspondent of the *Jiji Shimpo* at Peking, amounted to Tls. 6,400,000. The *Jiji* says that out of the ten Chinese railways two, namely, the Kyukiang and the Pinghsiang, show accounts which balance exactly, neither profit nor loss being in excess. Six of the roads show a net loss of 2,600,000 Taels; and two, namely, the Peking-Hankow and the Peking-Mukden, show a substantial profit. The figures work out as follows:—

	Taels.
Peking-Mukden Gross Earnings	12,000,000
Peking-Hankow Gross Earnings	9,600,000
Total	21,600,000
Gross Expenditures on the above two lines	11,600,000
Net profits on the above two lines	9,000,000
Losses on six roads	2,600,000
Net profits over the whole system.	6,400,000

INSPECTION OF RAILWAYS.—According to the Peking correspondent of the *N. C. Daily News* the Yuch'uanpu was recently ordered

by decree to inspect the Fukien, Chaochou-Swatow, Sunning and Huichou-Chaochou railways; and the result, as reported by the Ministry, shows that altogether the proposed railway lines in the Fukien province amount to over 2,000 li, but the line from Changchou to Amoy, 90 li, is first to be built. The line has been completed for ten or twenty li, and construction work, such as embankments or bridge building, is proceeding for the rest of the line. The line is level and straight and the construction is substantial. The subscribed capital is to be Tls. 1,370,000 and funds are required. With regard to the Chaochou-Swatow Railway it is reported that the length is eighty-five li, and that the line has been completed. The stations and cars are satisfactory, but the locomotives are not of the best pattern. The paid-up capital was $3,024,000 but $3,123,000 has been expended. After deducting cost of maintenance the receipts would pay about one per cent interest. The Sunning railway is to run from the Sunning city to the Kungyi Port, a length of 122 li, and it was completed last year. The paid-up capital was $2,740,000 and the actual capital expended was $2,500,000, leaving a surplus. The dividend is 2 or 3 per cent. The Chaochou-Huichoufu line was abandoned owing to the share holders breaking up.

THE CHEFOO-WEIHSIEN RAILWAY.—According to the latest advices, the required deposit of $3,000,000 has not been made up according to the instructions of the Governor of Shantung and the promises of early construction on this proposed line are far from bright. This condition was imposed by direction of the Board of Communications when the request for permission to inaugurate this line was made. It is understood that only $1,700,000 are available. An endeavor is being made to secure the necessary subscription to make up the deficit.

HULAN-TUNGKENG RAILWAY.—Viceroy Hsi, according to advice from Mukden, is preparing a memorial to the Throne to secure sanction for the construction of a light railway between Hulun and Tunkeng, a distance of 117 miles, at an estimated cost of one million yen.

PHILIPPINE RAILWAY CONSTRUCTION.—The line is now within a mile of Dao, Panay, which brings the construction from either end of the line within six miles of each other. The equipment for driving piles for the bridge over the Dao River was taken over the track.

The company has inaugurated an automobile service over fifteen kilometers of line connecting Janiuay and Pototan, the latter being a station on the Panay line and situated in a thickly populated district. The fare is forty centavos over the four zones in which the extension is divided. Through rates to any point along the line for passengers and freight have been issued.

THE KIRIN-CHANCHUN RAILWAY CONSTRUCTION.—Recent reports are to the effect that the rails for this line will be supplied by the Hanyang Iron and Steel Works. The work of construction is now progressing. Japanese and Korean laborers are employed.

THE HUNAN RAILWAY AGITATION.—An indication of the attitude of the Honan Chinese towards foreign railway loans may be taken from the following dispatch from Peking:

On the 21st May Li, a representative from Hunan to get sanction for the rejection of the foreign loan for railways, seeing that a certain Peking newspaper published a report that Hunanese in Canton have approved of having a foreign loan for Hunan railways, felt indignant and wept and cut one of his fingers and wrote with blood "Railways in Hunan should not borrow loans and I hope the Grand Secretary (Hsu Shihchang) will maintain that view" in fifteen Chinese characters and presented the writing to Hsu Shih-chang, the President of the Board of Communications. President Hsu was much affected.

PEKING RAILWAY NEWS.—Application was made to H. E. Hsi Lia Liang, Viceroy of Manchuria, by the Russian Consul at Mukden proposing the construction of a line connecting Harbin and Hunchun, but the Viceroy declined. Later the Russian authorities took it up with the Waiwupu and the latter sustained the Viceroy.

The report is made by the native press that a loan has been arranged with American capitalists for Tls. 18,000,000 and with British capitalists for Tls. 10,000,000, the funds to be used in the construction of the Kaifengfu-Changchow Railway.

THE KINCHOU-AIGUN RAILWAY.—In a letter to Messrs. Pauling & Co., Director Okamatsu of the South Manchuria Railway Company denies that Japan is opposed to the construction of this line and states that his country is anxious to participate in the financing and construction of the road with a share in the supply of materials. He writes that Japan would want the right to build a branch to connect the line with the South Manchuria. Mr. Wilfred Straight recently returned to New York via Europe to meet his principals in connection with this line. It is believed that his purpose is to interview Russian financiers with a view to securing their co-operation.

THE CANTON-HANKOW AND HANKOW SZECHUEN RAILWAY LOAN.—Advices from London on May 28th were to the effect that an agreement had been reached between the different nationals interested in this loan, and the impression was made that this meant the conclusion of the negotiations with the Chinese Government. The preliminary negotiations between the capitalists and the Chinese Government had been postponed for the reason that the German, French, British, and Americans could not agree. Now that they have agreed as to the division of the loan, the preliminary negotiations will be renewed and unless the provincial anti-loan influences seriously interfere, the conclusion of the loan may be arrived at within the year.

THE SHANGHAI-NANKING EXPRESS SERVICE.—This company inaugurated a fast service on its line on June 1st most successfully by an excursion to Soochow and return. A speed of 46 miles an hour was maintained on the outward trip and the return developed a speed of 60 miles, the maximum being 63 miles an hour at certain points. The track was in excellent condition. The locomotive used on this trip was a four wheeled coupled express engine manufactured by Messrs. Robert Stevenson & Co. of Darlington. The weight of the leading bogie wheels is 9.3 tons, trailing bogie wheels 9.65 tons, driving wheels 18.95 tons, trailing bogie 18.15 tons. Tender leading wheels 13.55 tons, intermediate wheels 13.55 tons, trailer wheels, 14.3 tons. Bogie empty 17.9 tons, engine 51.25 tons, tender 18.5 tons. Total weight of engine and tender empty 69.75 tons; bogie in working order 19.55 tons; engine in working order 56.65 tons; tender in working order 41.7 tons; engine and tender in working order 98.35 tons; tractive force at 75 per cent cut off 17.260 pounds; length wheel base of engine and tender 48 feet 9 inches; total length over the couplings 67.33-4; diameter of cylinders 18.26; diameter of driving wheels 6 feet 7 inches; diameter of bogie wheels 3 feet 6 inches; heating surface tubes 1,467.39 square feet. Fire box 162.61; Total heating surface 1,630 square feet; grate surface having an area of 28 square feet.

The first class coaches are of the most modern construction, electrically lighted and kept cool by a comprehensive system of fans. This express will have second and third class coaches, the former with a capacity of 72 passengers and the latter 130. The service was inaugurated June 3rd. Special arrangements were made for handling the special traffic to the Nanking Exposition. The following is the official notice published by Traffic Manager A. W. U. Pope:

"On and from the 3rd June, 1910, the present Time Table will be entirely revised.

"The Fast Train will leave Shanghai at 7:45 a.m. instead of 12:45 p.m. and the Slow Train at 8:10 a.m. instead of 8:00 a.m., the former stopping at the principal stations only, and the latter at all stations. No first class car will be attached to the Slow Train.

"There will also be an additional Limited Express Train leaving Shanghai at 1:05 p.m. and Nanking at 1:20 p.m. stopping at Soochow, Wusih, Changchow, and Chinkiang only. This train will hold only 48 1st class, 72 2nd class, and 450 3rd class passengers for the stopping stations, and when that number is accommodated the booking will stop. Seating will be provided on priority of application or booking. No pass holders will be admitted to this train, and no special cars will be attached for the public.

"A night train will run on Saturdays leaving Shanghai for Nanking at 10 p.m., returning from Nanking at 10 p.m., on Sunday.

"On Saturdays and Sundays, the ocal train which leaves Shanghai for Soochow at 6:10 p.m. and on Sundays and Mondays the local train which leaves Soochow for Shanghai at 7:30 a.m. will be cancelled.

"Important alterations will also be made in the running of other Main Line and Woosung Line Trains.

"New Time Tables may be had on application to any Station Master of any Station on the Railway, or from the General Offices, Shanghai Station on and from the 1st proximo."

PHILIPPINE MINING NEWS

QUICKSILVER IN BENGUET.—Warren D. Smith, Chief Division of Mines, announces the discovery by Mr. Hulbert of the Major Mining Company and Mr. Smith of a sample containing cinnabar, mercury sulphide, on Batwaan Creek, Benguet. It was found in the heavy concentrate while panning for gold. Only small quantities have been realized, but it is not improbable that it might be found in commercial quantities. The same material has been located near the Kios trail. The following information has been published in regard to this mineral by the Division:

"To assist prospectors who may not be familiar with the characters of cinnabar, the following information is furnished. It is a sulphide of mercury, Hg. S. and, when pure, contains 86.2% of mercury. It is very heavy its specific gravity being 8 to 8.2, it occurs in bright vermillion to brownish-red masses of granular texture; more rarely as small transparent rhombohedral crystals (its form in Benguet) or a bright scarlet powder, or an earthy red mass.

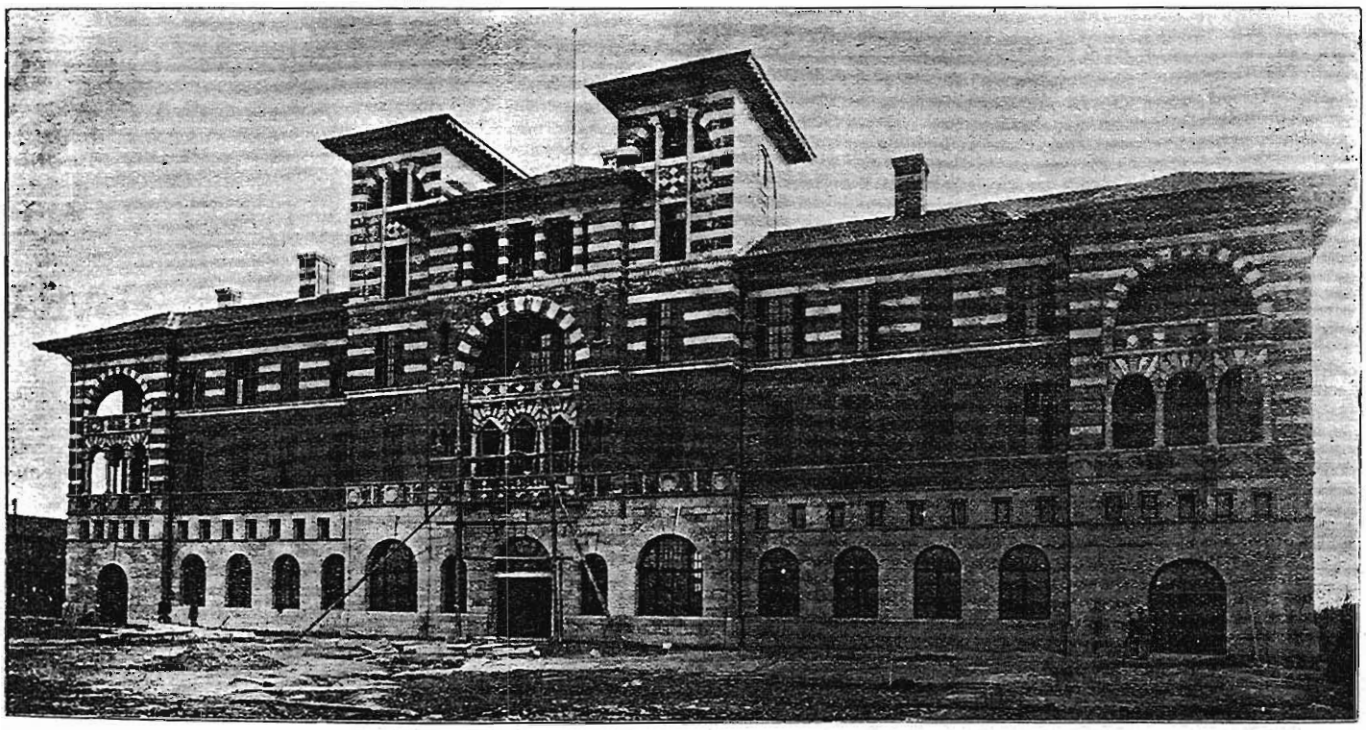
"Easy tests:—Heat the powder in a closed tube when a sublimate of mercury, or a 'mirror' will form in the cooler part of the tube, or if cinnabar powder is moistened with hydrochloric acid and rubbed on a bright copper, the coin will be coated with mercury

THE PARACALE EXTENSION COMPANY.—Messrs. M. A. Clarke and Nels Peterson, who are interested in the promotion of the Paracale Extension, are expected to return to Manila from Shanghai at the end of the month after which Mr. Peterson will proceed to New Zealand to purchase the first of two dredges to be installed during the next year on this property. It is understood that sufficient capital to instal the first dredge has been raised among Shanghai capitalists. The property is considered one of the most valuable in Paracale.

THE BENGUET CONSOLIDATED MINING COMPANY.—The output for the month of May was 100 ounces making in all to date about ₱20,000 worth of gold taken out since the disastrous flood of October. The company is preparing to restore the cyanide plant and increase the present capacity of the batteries.

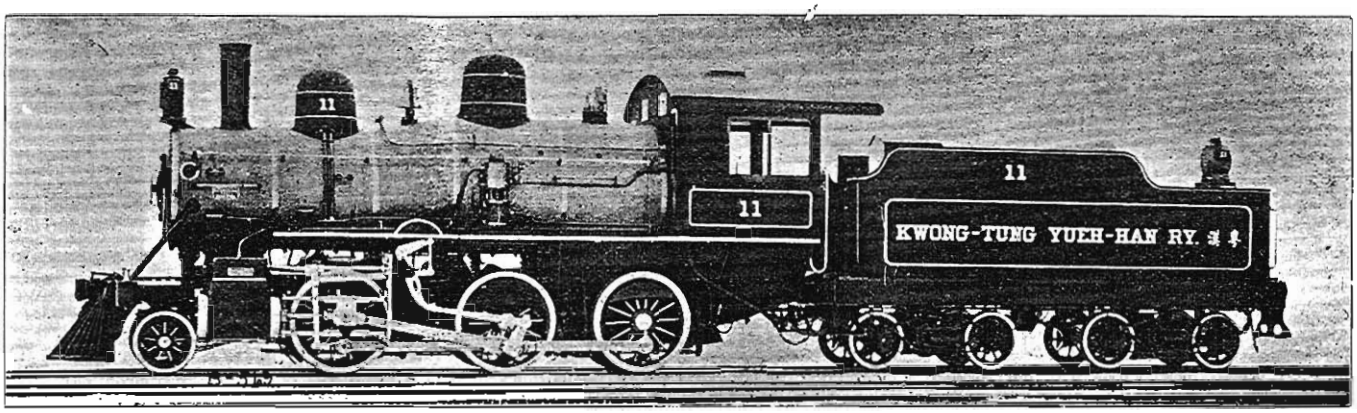
THE STANLEY COMPANY.—The returns from the Stanley dredge in Paracale for May amounted to 108 ounces. Paracale is now in the middle of the dry season and water is scarce for dredging purposes. The Stanley is slowly approaching the richest sections of their property and large returns are expected.

The Line of a Hundred Pagodas



NEW STATION AND ADMINISTRATION BUILDING AT SHANGHAI

PASSENGERS TO THE YANGTSZE RIVER PORTS SHOULD TAKE THE STEAMER AT NANKING, THUS ENJOYING A TRIP THROUGH THE INTERESTING LAND OF PAGODAS AND "THE GARDEN OF CHINA." NANKING, THE SOUTHERN CAPITAL OF CHINA, WITH ITS MANY INTERESTING SIGHTS, THE CELEBRATED MING TOMBS, AND OTHER ATTRACTIONS, CAN BE SEEN IN TWO DAYS' TRIP FROM SHANGHAI. THE FIRST AND SECOND CLASS COACHES OF THE S-N. RAILWAY COMPARE WITH THE BEST IN EUROPE OR AMERICA FOR COMFORT AND SERVICE. TWO EXPRESS TRAINS DAILY.



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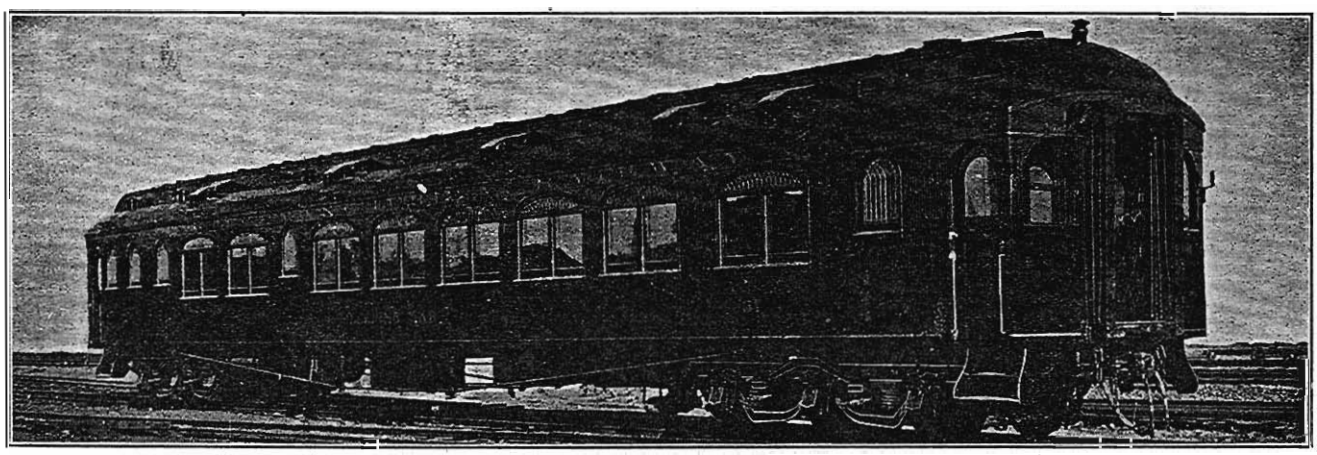
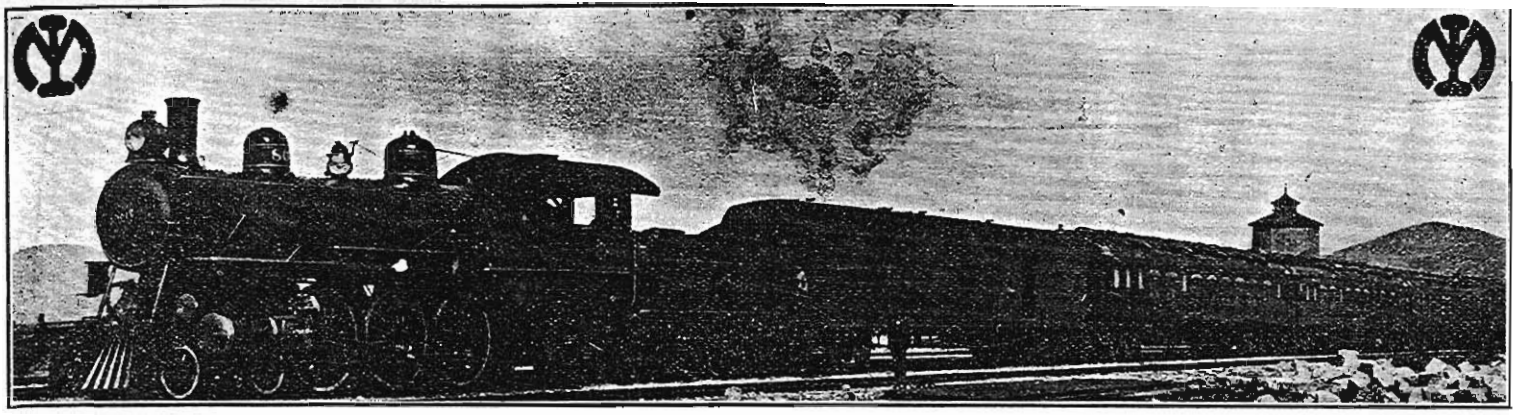
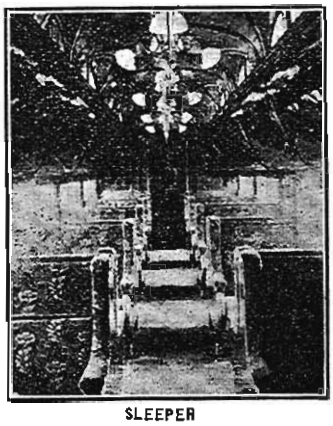


PULLMAN SLEEPING CAR ON THE SOUTH MANCHURIA RAILWAY

Supplied by the MITSUI BUSSAN KAISHA



South Manchuria Railway



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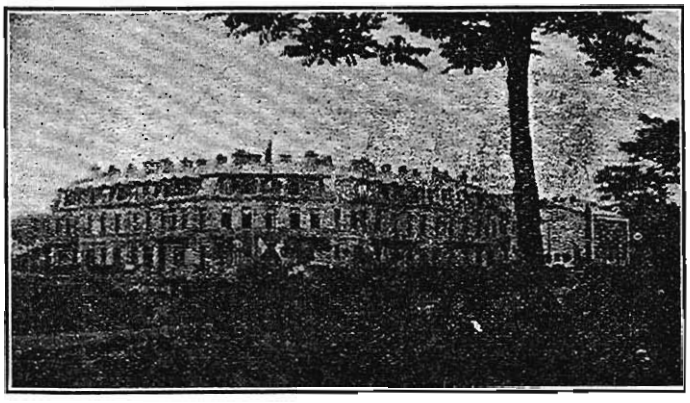
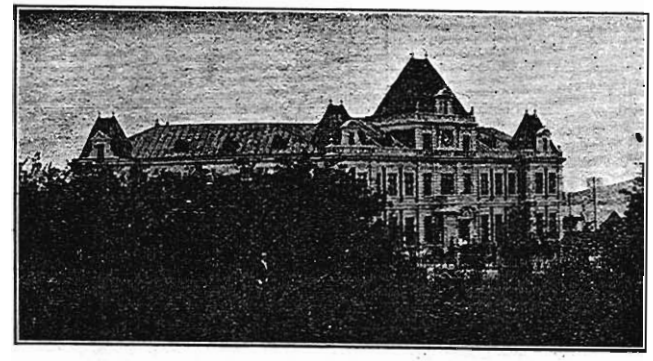


SOUTH MANCHURIA RAILWAY, YAMATO HOTEL, PORT ARTHUR



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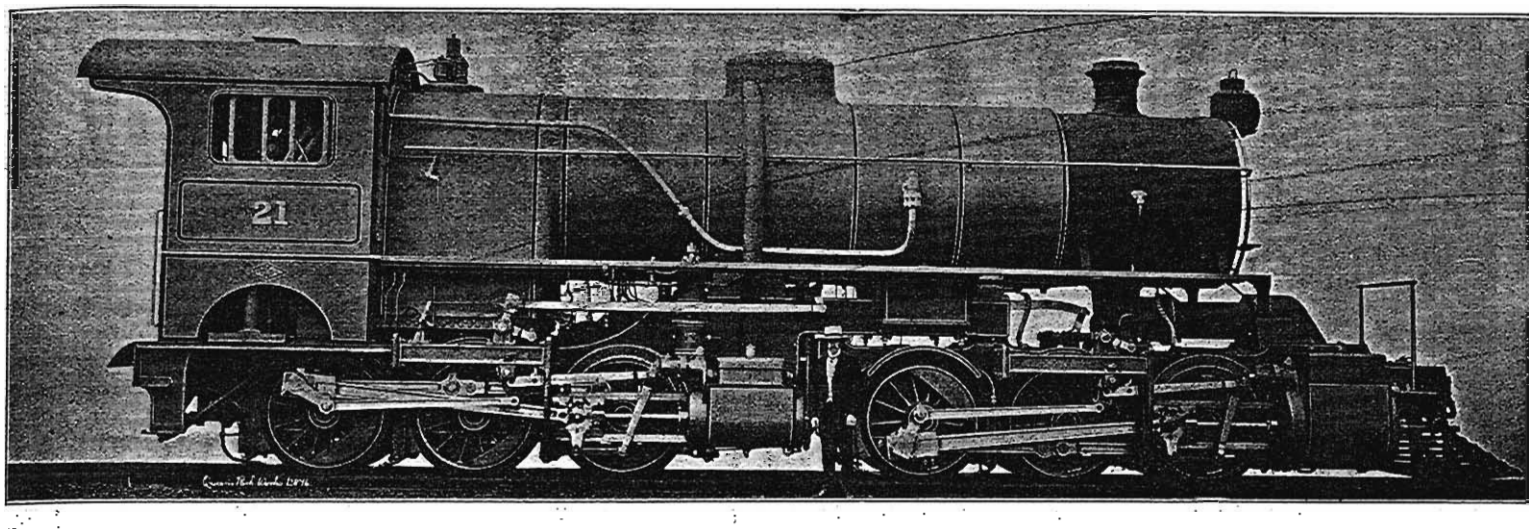
CHINA: Hsinminfu, Peking, Shanghai, Shanhaikuan, Tientsin.

JAPAN: Hakata, Hiroshima, Kioto, Kobe, Kumamoto, Moji, Nagasaki, Nagoya, Osaka, Shimonoseki, Tokyo, &c.

SOUTH MANCHURIA RAILWAY COMPANY, Dairen

Tel. Add.: MANTETSU -:- Codes: A. B. C., 5th Ed., A1 and Lieber's



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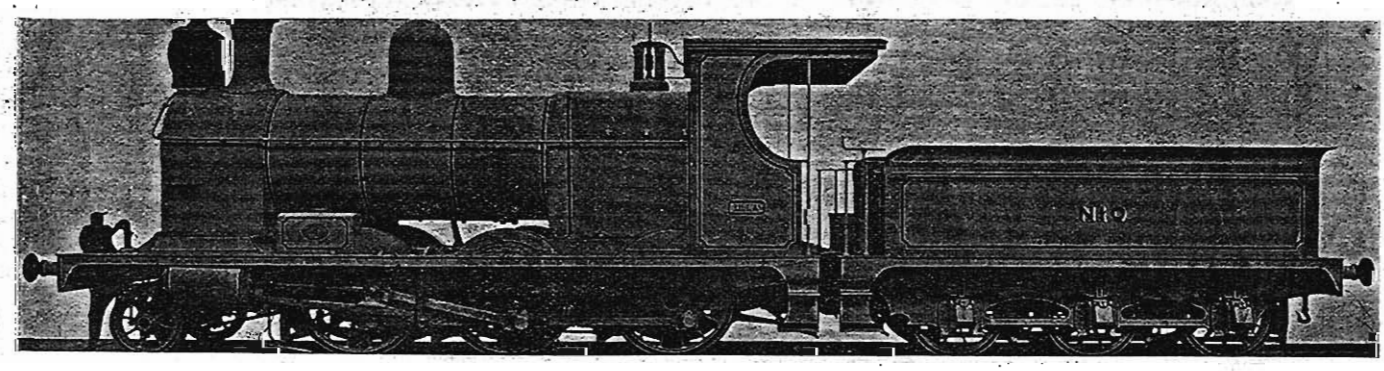


TYPE OF NORTH BRITISH LOCOMOTIVE SUPPLIED TO THE TIENTSIN-PUKOW—SOUTHERN SECTION

THE LARGEST LOCOMOTIVE WORKS IN EUROPE

China, Manchuria, Japan, Indo-China, Siam, Straits Settlements, Malay States, Burma, India, Malaysia, and the Philippines

THE FAR EASTERN REVIEW

VOL. VII.—No. 2. MANILA, SHANGHAI AND YOKOHAMA, JULY, 1910. 50 Centavos Philippine Currency 25 Cents, U. S. C.

RAILWAYS IN CHINA, 1910

His Excellency HSI LIANG,
VICEROY OF MANCHURIA

General News and Comment

Macao Boundary Dispute

Pioneer Mining Enterprise in China

ENGINEERING
COMMERCE & FINANCE

THE FAR EASTERN REVIEW

COMMERCE ✠ ENGINEERING ✠ FINANCE

VOL. VII. MANILA, P. I., SHANGHAI, AND YOKOHAMA, JULY, 1910 No. 2.

RAILWAYS IN CHINA, 1910

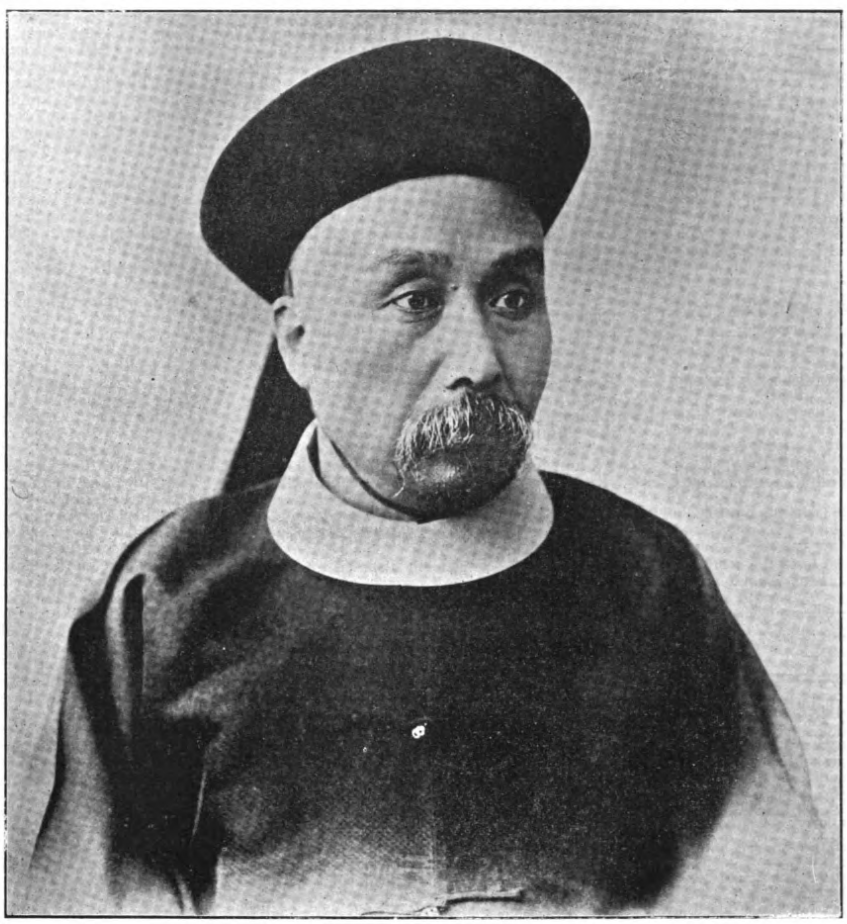
SUN NING RAILWAY EXTENSIONS

(From Our Own Correspondent)

Recently our correspondent in Southern China took a trip over the Sun Ning Railway in Sun Ning County, Province of Canton, and writes us that he left Canton on the railway company's launch "Sun Ning" in company of Mr. Chin Gee Hee, president and manager of the road, and after a most enjoyable eleven hours' launch ride of one hundred miles on the West River and some of its many tributaries arrived at Kwong Yick on the On Sui How River, the present northern terminal of the Sun Ning Railway, and thence by special train, after dark, was taken over the road eighteen miles to the city of Sun Ning, the principal city on the line of the road and the largest city in Sun Ning County, where the head offices of the company and the home of Mr. Chin Gee Hee are located This distance of eighteen miles was covered on the train in less than forty minutes including a short stop at Shui Boo. The writer was well housed and cared for that night at Sun Ning by his genial host.

The next morning a flying trip was made over the road to Tao Shun, the present southern terminal of the road some twenty-one miles south of Sun Ning and within three and a half miles of Sam Kap Hoi River. This intervening strip of three and a half miles is now being graded preparatory to laying the roadbed down

(Continued on page 41)



H. E. HSU SHIH-CHANG

PRESIDENT OF THE BOARD OF POSTS AND COMMUNICATIONS

H. E. SHEN YUN-PEI
ACTING VICE-PRESIDENT OF THE BOARD OF POSTS AND COMMUNICATIONS

RAILWAYS IN CHINA, 1910

(Continued from page 37.)

to the river. The Sam Kap Hoi River is much used by Chinese steamers carrying passengers and freight plying between Hongkong, Macao, Fatsan and other Chinese coast cities and Canton.

The length of the railroad from Kwong Yick to Tao Shun is thirty-nine miles and there are nineteen stations on the road, the principal ones of which in their order from north to south are Kwong Yick, Mak Hong, Man Fook, Aikong, Chin Ben, Shui Boo, Oung Hong, Bau Gong, Sun Ning, Ai Hong, Ng Ship, Lee Que, Hi Hung, Chong Low, Look Tung and Tao Shun. Three passenger and two freight trains making a daily round trip each are in operation, and the present receipts from the passenger traffic alone averages about one thousand dollars per day. Many hundreds of workmen are engaged on the line of the road straightening curves, lessening grades and ballasting roadbed. The road traverses Sun Ning County from the On Sui How River on the north southerly to the southern boundary of the county, passing through a rich agricultural district with rice as the principal crop. The country certainly looks prosperous and enjoys that reputation.

At Kwong Yick the company has a fine, large office building, machine shops, railroad yards, and a car building house from which they are about to turn out the second first class passenger coach built at the shops, the iron work of the trucks being the only portion of the coach imported. The track of the railroad is laid with sixty pound German rails, and the road is equipped with five large Baldwin, one medium size, and three small German locomotives; two first class passenger coaches; eight second class passenger coaches; six third class passenger cars; sixteen box cars; forty-five freight cars, and sixty dump cars used in construction and alteration work.

At Sun Ning the company has erected a fine, large brick building used exclusively for railroad office work, a brick railroad station, brick printing office where all of the printing for the railroad is done, locomotive and car sheds, with innumerable smaller buildings around the yards necessary for the handling of business in connection with the railroad operations—nothing seems to have been overlooked or forgotten.

This railroad might well be called A ONE MAN RAILROAD as Mr. Chin Gee Hee, who spent forty-three years of his life in America, the greater portion of the time engaged in railroad construction work by contract for the Northern Pacific, Great Northern and various short lines running out of Seattle to the numerous coal mines and in this manner gained an enviable railroad experience which has stood him well in hand as has been fully demonstrated by his building of the Sun Ning Railway. Mr. Chin Gee Hee is now sixty-six years of age, in the best of health and full of energy. He was born in Sun Ning County some nine miles from the city of Sun Ning and after accumulating a respectable fortune in America conceived the idea of erecting an everlasting monument to himself and family and concluded that the building of the Sun Ning Railway would be best fitted for the occasion set about and secured the necessary capital, some three million dollars, local currency, from Chinese merchants in America and Hongkong. When this was practically assured, he individually surveyed the line of road, settled all controversies regarding rights of way, did the engineering, let the several contracts for construction of roadbed and bridges,—being careful when so doing that a man from each village secured the contract for work to be done on the line of the road nearest to the village where he lived. Thus the laborers along the route secured work on the road nearest to their respective villages, and in this way strife, and perhaps strikes, were avoided. He taught these men how to do the work from the handling of a pick and shovel to the driving of the spikes securing the rail to the ties and personally superintended the same; located his many stations along the route and let the contracts for the erection of the station houses; laid out his yards and location of workshops at Kwong Yick; surveyed and laid out the town (now city) of Kwong Yick with concrete streets twenty feet wide, sidewalks of the same material, seven feet wide with drains on each side, a city laid off and built up on perfect squares and now boasting of six hundred brick houses. When the railroad was completed, Mr. Chin Gee Hee personally equipped it and taught the Chinese locomotive engineering. No assistance whatever has ever been asked of the European in relation to anything in connection

H. E. WANG TA-HSIEH
VICE-PRESIDENT OF THE BOARD OF POSTS AND COMMUNICATIONS

with this railroad, and no financial aid has ever been received from the Chinese Government, in fact none was ever asked for, but the Chinese Government, fully recognizing and appreciating what Mr. Chin Gee Hee accomplished, has honored him with a rank next to the Taotai of Sun Ning County and has adorned him with a pink button and jade emblem to be worn on his cap as a mark of distinction. He looks forward to the appointment of Taotai in the near future, and those who have had the pleasure of meeting and conversing with him, and seeing what he has done for Sun Ning County, most earnestly hope that his fondest dreams may materialize.

At the present time, under the exclusive supervision of Mr. Chin Gee Hee, over one thousand workmen are employed breaking ground, grading and constructing roadbed for a railroad which is to be a continuation of the Sun Ning Railway, starting on the northern bank of the On Sui How River immediately opposite Kwong Yick, and running to Kwong Wau Mon (Chinese Customs) on the same river, a distance of about thirty miles. All contracts for construction and necessary material for building and equipment of the road have been let, and material is now arriving almost daily at the several landings along the river nearest to the site of operations. It is calculated this additional thirty miles of Sun Ning Railway will be open for traffic by Chinese New Year, 1911, and will cost about two million dollars, local currency. When opened for traffic passengers and freight will be conveyed across On Sui How River by ferryboats, and later on it is the intention of the company to place massive ferryboats on the river sufficient in size to take trains aboard. When completed, this portion of the Sun Ning Railway will put out of commission the many steamer landings between Kwong Yick and Kwong Wau Mon where the various steamers plying between Honkong, Macao, Canton, Fatsan and other Chinese ports along the coast are in the habit of stopping, thereby greatly increasing the railroad revenue. In the building and equipping of the extension of the Sun Ning Railway to Kwong Wau Mon, the Chinese Government has not been asked to render any financial assistance and the road is being built and will be equipped with private Chinese capital, shares of stock of the company being sold for this purpose. It is needless to say that the Chinese see that the investment is a good one and are eager to purchase the shares offered.

RAILWAYS IN ANHUI

The province of Anhui has an area of about 50,000 square miles and a population of over 25,000,000. The Great Yangtze River flows for nearly 200 miles through the heart of the province from South-west to North-east, and with its tributaries, canals and creeks, has formed the highways of communication from time immemorial. Roads in the Western sense of the word do not exist. Except in very few instances, narrow paths and wheelbarrow tracks are the "trade routes" leading to the nearest navigable creek, where the sampans and junks receive the produce of the country and deliver it to the great provincial mart of Wuhu, on the Yangtze. Wuhu, the trade center of the province, is situated on the right hand bank of the river, about 300 miles from the sea, or about equidistant between Shanghai and Hankow, the "New York" and "Chicago" of China. Wuhu was opened to trade as a Treaty Port in 1897. Its advance has been rapid, the volume of business trebling in the last ten years. The principal article of commerce and export is the great staple of China—rice. The immense level plains, periodically flooded and fertilized by the Yangtze, are specially adapted to the cultivation of this staple, and yield abundant crops. A ready market is always at hand for the sale of this product, and the export from Wuhu has risen from 47,400 tons in 1895 to 330,700 tons in 1905. From the interior of the province large quantities of rice, paper, beans, nuts, cotton, tobacco, tea, and other products are extensively marketed at the neighbouring towns of the adjoining provinces of Chekiang and Kiangsu. These do not appear in any returns of trade, and can only be approximately determined by observation.

The many waterways leading to Wuhu are not always in a navigable condition and the carrying trade of the interior is subjected to much inconvenience and delay by taking a circuitous route. The main canal or river to Wuhu from the east and south is choked with

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CONSULTING ENGINEER TO THE BOARD OF POSTS AND COMMUNICATIONS.—DIRECTOR OF THE PEKING-KALGAN RAILWAY

silt in one important section which cuts off Ningkwofu and the Tananfu watershed in the dry season from November to March. In the absence of roads, these important districts are compelled during the dry season to carry on their traffic via Taipingfu and thence up stream against the swift Yangtze current to Wuhu, or to transport it under somewhat equal difficulties on the one hand across the "Tong Pa" Barrier via Liyang in Kiangsu and thence by the Taihu Lake towards Shanghai; or on the other hand via Sengan and Hachowfu to Hengchow or via the Tai Hu for the same destination at Shanghai. These routes make for expense, difficulty and delay, and either is only a choice among many evils. But even under these great disadvantages, produce is raised and exported in competition with more favored localities, and these conditions form a sound basis for the hypothesis that railway facilities would increase trade a hundredfold. Under the present system of transporting the rice crops by junks the temptation to water the rice and increase the weight seems too strong for the average junk owner to resist. This practice has earned for the district a notoriety which must react on the whole community and materially affect the value of the product. The practice of watering the rice after it has been taken aboard by measure results in a swollen grain at the port of discharge. The junk owner is enabled to deliver the exact measure of freight and retain a good proportion as squeeze pidgin in addition to receiving his legitimate freight charges. The producer and wholesale merchant not only loses part of his cargo, but receives the remainder damaged and depreciated in value. This practice which is prevalent in the Anhui districts exposes the producer to a monetary loss, of which the legitimate freight charges are a mere nominal part. This class of transport with its drawbacks will cease within the railway sphere as soon as the safety and economy of railway carriage is available. In addition to the above disadvantages to the trade of the Wuhu district, the question of time is an important factor. The junks take from two to five days (according to the weather) to convey their cargoes from Ningkwofu and the Tanan Lake watersheds to Wuhu, an average distance of 60 miles which a freight train would cover in a few hours. The actual freight charges by the slow and uncertain junk transport would give a fair opening for railway competition. By the latter method the farmer could accompany his products to the market and return the same day with his money and purchases.

In considering the question of railway facilities for the Wuhu or Eastern district of Anhui Province, the scheme must be broad enough to co-operate in harmony with the proposed systems in Chekiang and Kiangsu Provinces. Wuhu is only some two hundred and thirty miles from Shanghai by the most direct route across a feasible and productive country highly remunerative for a railway line. Wuhu is some forty miles nearer to Shanghai by this direct route than by the way of the Shanghai-Nanking

railway to Nanking and up river to Wuhu, or via the proposed railway connecting these ports. The magnet of trade in all the Yangtze valley swings towards Shanghai, and through rail connection with the trade metropolis must always be considered as an important feature in any provincial project. Railway schemes for the Yangtze valley are still in a somewhat chaotic stage, but as time goes on and the value of the most direct and quickest route is recognized by the Chinese, the Anhui railways will be the key to the great Yangtze valley trunk line from Shanghai to Hankow. The nearest approach to a through system at present is embodied in the existing Shanghai-Nanking railway and the concession held by the British & Chinese Corporation for a road between Pukow or some point on the Southern section of the Tientsin-Pukow Railway and Singyang on the Pekin-Hankow line. A glance at the map, however, will demonstrate that, at the best, this combination is far from being the most direct and economical. The future holds bright for a line starting from Shanghai over the existing Kiangse Railway to Kashing, from where the Chekiang Railway Company will build their line to Huchow, and thence to the Anhui border.

Here the Anhui railways will commence. From the border to Ningkwofu and thence westward through Chihchowfu and the provincial capital at Anking and through to Hwangchow and Hankow, undoubtedly marks the route of the future Yangtze valley through line between Shanghai and Hankow. An alternative might be found by diverting the line at Ningkwofu, northwest to Wuhu, and thence from the other bank of the Yangtze the line could strike westwards towards Hankow and at the same time continue northwest through Luchowfu, Yingchowfu, Chenchowfu to Kaifeng, as is already mooted by the Anhui promoters.

Another Yangtze Valley project which eliminated the province of Anhui was advanced by certain American promoters, and a concession applied for, but never granted. This project is, however, interesting as showing an alternate way of reaching the upper Yangtze by avoiding much of the difficult country. This project included the use of the existing line from Shanghai to Hangchow. From here it would follow up the valley of the Tsien-tang river through Yenchow, and Chuchowfu, in Chekiang province, entering Kiangsi province near Kwangsinfu, and thence to the provincial capital at Nanchangfu. From Nanchang the line extended westwards through Juichowfu and entered Hunan Province. From Changsha the capital of Hunan the project line included Changteh and Yungshun reaching Chingking in Szechuen without traversing the difficult mountainous country of the Yangtze gorges. This line holds a similar relation to Hankow as the British project, as in both cases, Hankow can only be reached over a branch line. The value of the American project seems to lie in the fact that the difficult engineering feat of bridging the Yangtze in its lower reaches is avoided.

So for the present Anhui holds the key to a through railway service in the Yangtze Valley and any scheme must be elaborated with all due reference to its future relation with connecting roads in adjoining provinces. The construction of the Chekiang line to Huchow and thence into Anhui to Ningkwofu and Wuhu, must materially affect the profits of the Shanghai-Nanking Railway, by diverting much of the through passenger and other traffic. However, when the Shanghai-Nanking line is extended to Wuhu, and both lines enter into direct competition for the Shanghai traffic, the much criticized British line will then justify some of the extra expenditure in its construction cost, for although handicapped by some forty to fifty miles in distance, the well ballasted bed, with its hard wood sleepers, 85 lb. rails, and high grade rolling stock, will easily permit of a running speed within the limits of safety, which will be impossible on the lighter and cheaper constructed lines under Chinese management. It is true that this contingency is still a long way off, but the situation is bound to be created in time, and unless the Chinese adopt a higher standard of work, the Shanghai-Nanking must always remain a factor to be reckoned with in any through service.

H. E. SHENG KUNG-PAO, SHENG HSUAN HUAI
TITULAR VICE-PRESIDENT OF BOARD OF COMMUNICATIONS, ETC.

The journey from Shanghai to Wuhu upstream takes 40 to 45 hours and downstream over 30 hours. Rail connection between the two parts would reduce the time to 6 or 7 hours, and give an immense impetus to trade. The connection would be of infinite advantage to the province and doubly benefit the Chekiang and Kiangsu railway, by bringing the Anhui traffic to Shanghai over its rails. The direct line from Anhui to Shanghai through Huchow, Kashing and Sungkiang with the connection to Hangchow would serve that country admirably as a trunk system.

If the Nanking line is extended to Wuhu, before the Anhui railways are constructed, it might materially reduce the prospects of the latter project. This extension which received the approval of Viceroy Tuan Fang has been surveyed and estimated for by Mr. A. H. Collinson, M. I. C. E., the Engineer-in-Chief of the Shanghai-Nanking railway, who now holds the position of Consulting Engineer to the Viceroy. This Nanking-Wuhu extension, by tapping the immense rice districts of Anhui, would attract considerable freight to the Shanghai-Nanking line and materially increase its income from this source.

Wuhu is situated in the center of a vast rice producing area. The over production of this crop (while the country is still a long way under its full producing capacity) is "exported" to the ports of Swatow, Canton, Shanghai, Foochow, Chefoo, Amoy, Tientsin and Kiaochow, each port individually varying in its annual demands but collectively forming a strong and steady market for all the available crop. Paper is largely manufactured as a sort of bye-product from the rice crops.

In the scheme outlined for the Anhui Railway system, the districts proposed to be served at the outset are those which concentrate upon the following towns: Wuhu, Wanchi, Ningkwofu, Pikachiao (including Kien Ping and the Ta nan lake watershed), Kwantechow and Sengan. Kwantechow is about 8 miles from the provincial border and is the market place of a very extensive and populous valley. It does a considerable trade with Sengan across the border in Chinkiang at the head of the Huchow canal. This is a good business town, with a large established trade with Southern Anhui, which is facilitated by the canal leading to Huchow, and its connections with Hangchow, Soochow and Shanghai. The Anhui railway project therefore contemplates the town of Sengan as its terminal which will in time be the terminal of the Kashing-Huchow branch of the Chekiang system.

The Chekiang Railway company will be compelled by its own interest to construct this line to secure the Anhui trade, with obvious profit to both companies and the districts served.

Rice is sold in the market of Kwantechow and transported thence to Sengan (50 li) by wheelbarrows, pack mules and ponies, the road being very congested at times with this traffic. Rice carried over this distance (say 17 miles) is charged at the rate of $6.00 to $7.00 (silver) per ton. This is a typical instance of the efforts made in parts of the rice district unserved by water communication to dispose of the surplus crop, and which makes for the profitable operation of a railway in that section.

KUAN MAN-CHUN

ASSOCIATE DIRECTOR OF THE IMPERIAL PEKING-KALGAN RAILWAY

Pika-chiao is indicated as the convenient station for Kien Ping on Ta nan lake watershed.

Schuang-Chiao has water communication with a large rice producing district and although close to Ningkwofu necessitates independent station accommodation.

Ningkwofu is the market center for a large area, and several coal mines are located south of the town.

Wanchi is a town of considerable importance, the trade of the Kinghsien valley and river passes through it to Wuhu, and cheap railway facilities would attract the trade to the line.

Coal.—In addition to the mines south of Ningkwofu, coal has also been found to the South East of Kian Ping not more than 10 miles from the proposed line. And at the point when the line approaches the boundary of Chekiang Province there are also coal mines quite close to the line, and in the broken range of hill, in Chekiang on the road to Huchowfu, there are mines where coal, silver and gold were extensively mined in former times. The coal beds are all smoke coal but none of these have been worked to any extent in recent years owing to the scarcity of capital and the difficulty of transport. A foreign engineer has been developing some of the coal mines in this district for Chinese owners during the last year, and has several thousand tons ready for shipment, but the authorities seem antagonistic to any extensive mining operations. The output is necessarily restricted being worked under native methods.

The group of hills near Wuhu, culminating in Pei Ma Shan or White Horse Hill, should develop valuable quarries of limestone, Breccia, and red sand stone, and contribute a good building material for Wuhu. These hills were mined for gold and silver some 30 years ago, but on account of disturbing the "Fengshui" of the "White Horse" the natives demanded that further operations should cease. It is a strange fact that although coal is found in nearly all the formations of the lower Yangtze little or none of it is being mined, and the coal used so extensively on the River comes from Chihli, Manchuria, Japan, Australia, and even from England. Such a state of affairs would terminate once a railway is built near the coal fields, and the development of such mines figures in any calculation of prospective traffic sources. It is conceded that in such cases the coal should be mined by natives and by native methods for a commencement. With the railway to carry the output to the coal markets on the Yangtze the mining industry would develop rapidly. Experience of foreign syndicates holding railway and mining concessions, and who have gone to great expense to develop the mines with modern methods and machinery, demonstrates the unwisdom of superseding native methods in the early development of coal mining. Instead of sinking foreign capital in works and machinery in remote places, it would appear more profitable to the success of a railway venture, to induce the native to increase their output with their own methods, by facilitating a market for the coal.

Route of Railway.—The main canal or River by which the waters from the south east Anhui Railway sphere find their way to the Yangtze passes through Wuhu and forms a "delta" in the river as its mouth, with the consequence that the hulks of the shipping companies at Wuhu have to be moored far out into the river, and these and the passing steamers can only be approached by boat, thus rendering it very expensive to handle goods to and from the steamers and shore.

It was decided that the best site for the railway approach to the Yangtze was at the likin station, where the water was deeper at the bank, where the new foreign concession begins, and where the workshops, engine house and passenger station could be located on higher ground convenient to the city.

The line passing to the north of the city crosses the river at the first open ground upstream and thence follows the Wanchi Road as far as the Pei Ma Shan hills, passing along the north-east of the hills direct to the town of Wanchi, following the line of least resistance through a watery country.

The water at Wuhu at times reaches the level of 23 feet on the Custom's gauge board, and with the Yangtze at that level the district between Pei Ma Shan and Wanchi is very much flooded. In places the water is retained for future irrigation purposes, but even with this it maintains generally a very high level.

The maximum Yangtze flood level at Wuhu within the past 40 years registered at about 30 feet on the Custom's gauge board, and thus with some 7 feet of water in excess of the average condition the provisions for waterway or bridge opening on the Railway line to Wanchi are very heavy indeed. In 1901 (the year

of record flood) the water remained near its maximum level for some 2 months, and with floods of a lesser magnitude it often keeps at a level of from 20 to 25 feet for about 4 months. Ample provision was therefore made over this portion of the line for the ingress and egress of such an immense body of water as is liable to deluge this country.

These floods have their compensating advantages to the landowners. If they deluge the country in one year, their fertilising effect for succeeding years makes up for the damage a hundredfold.

The ground is dry from December to March or April but at no time can foundations be installed without encountering water.

From Wanchi a series of low hills have to be manoeuvered through to the crossing of the canal which branches from the main canal at the Pagoda. This canal will be crossed about a mile to the North of Chu T'ang village and the line will then follow through the small range of hills at Lung Wan Shan and negotiate another series of low hills to the gap at Miao Pu and on to Ningkwofu.

From Ningkwofu for some eight miles to the east the country is subject to heavy floods. There are three rivers to be crossed between Ningkwofu and Schwang Chiao aggregating some 900 feet of bridging over normal water while the remainder of the eight miles requires plentiful flood opening.

There is a low watershed to be crossed between Ningkwofu and Hung Ling Chiao, also the river of the latter name. Proceeding to Pi-ka-chiao, where the line crosses the river immediately downstream from the town, and then negotiates the low hills towards the valley between Yang Shang Thu and Pei Ma Ling Shan. From this point a line, of least resistance, is selected to the N. E. of Kwangtechow where a station will be located less than a mile from the city. Thence, having crossed the upper waters of the Kien Ping River's branches, it will follow the valley to the North of the Sengan Road, cross the low watershed of the province boundary and approach Sengan to the North of the town and river, terminating in a position for the legitimate extension towards Huchowfu.

From Hung Ling Chiao to Sengan the waterway will be considerable but not abnormal.

Such in brief are the outlines of the proposed Anhui Railway, and, in 1905, H. E. Lord Li Ching-fang, who had originated the idea of connecting Wuhu with Shanghai in the south-east, and with the Peking-Hankow Railway in the north-west, took the initial steps towards constructing the lines. As the Southern Section was the most important, and promised greater dividends from the start, it was decided to commence operations on that section first. The Anhui Railway Company was organized and under the leadership of Lord Li, the gentry of the province readily subscribed for the shares. In the autumn of 1906 an engineering staff under the direction of E. J. Muller, C. E., was engaged and survey of the line commenced. Rails (75 pound per yard) were ordered from the Hangyang Iron and Steel Works; Japanese oak sleepers, locomotives, cars, machinery for workshops, stone crushing plant for ballast, bridges, etc., etc., were all ordered; contracts let for the earthwork, abutments, piers, culverts, etc., and work commenced in earnest.

But from the start discontent reigned among the stockholders. The "Northern Party" of the Anhui Gentry insisted that the Northern Section should be built first and a keen and bitter fight was inaugurated, which grew to a stage where the "Northern Party" shares subscribed were never taken up and the funds promised were not forthcoming to carry on the work. Handicapped at the outset by the threatened shortage of funds, directions had to be issued to proceed with the work slowly, and orders for material were cancelled. This was not an easy matter in all cases and some orders for machinery, sleepers and bridges already on the way could not be cancelled and so arrived in specified time. Work on the earthwork, however, proceeded slowly and the line between Wuhu and Wanchi (about 20 miles) was nearly completed. This section was most troublesome as the line traversed a very low and swampy district, frequently flooded. The grade line is about eighteen inches above the highest flood, which necessitates embankments 35 feet high at many places. From Wanchi, however, the line rises and to Sengan it is quite easy.

The pier, abutment and culvert work was permitted to go ahead slowly according to orders given the engineer, and were not completed until the spring of 1909, and only a few of the steel trusses were erected. These trusses are of the Pratt system, pin connected, built by the American Bridge Company of New York. Orders were given the engineer that all bridges must give a clear headway of 15 feet above maximum high water, an extraordinary clearance, and that as few piers as possible should obstruct the waterway.

These culverts, piers and abutments are all of reinforced concrete of the same type and specifications as employed by the leading American railways. As this was the first attempt to introduce reinforced concrete throughout in railway construction in China, it met at the outset with great opposition and distrust from the Chinese, who thought it was 'a bad material' and not applicable to the country. However, when the structures were completed, opinion changed, and it is almost certain that when work is resumed, this class of construction will feature the entire line.

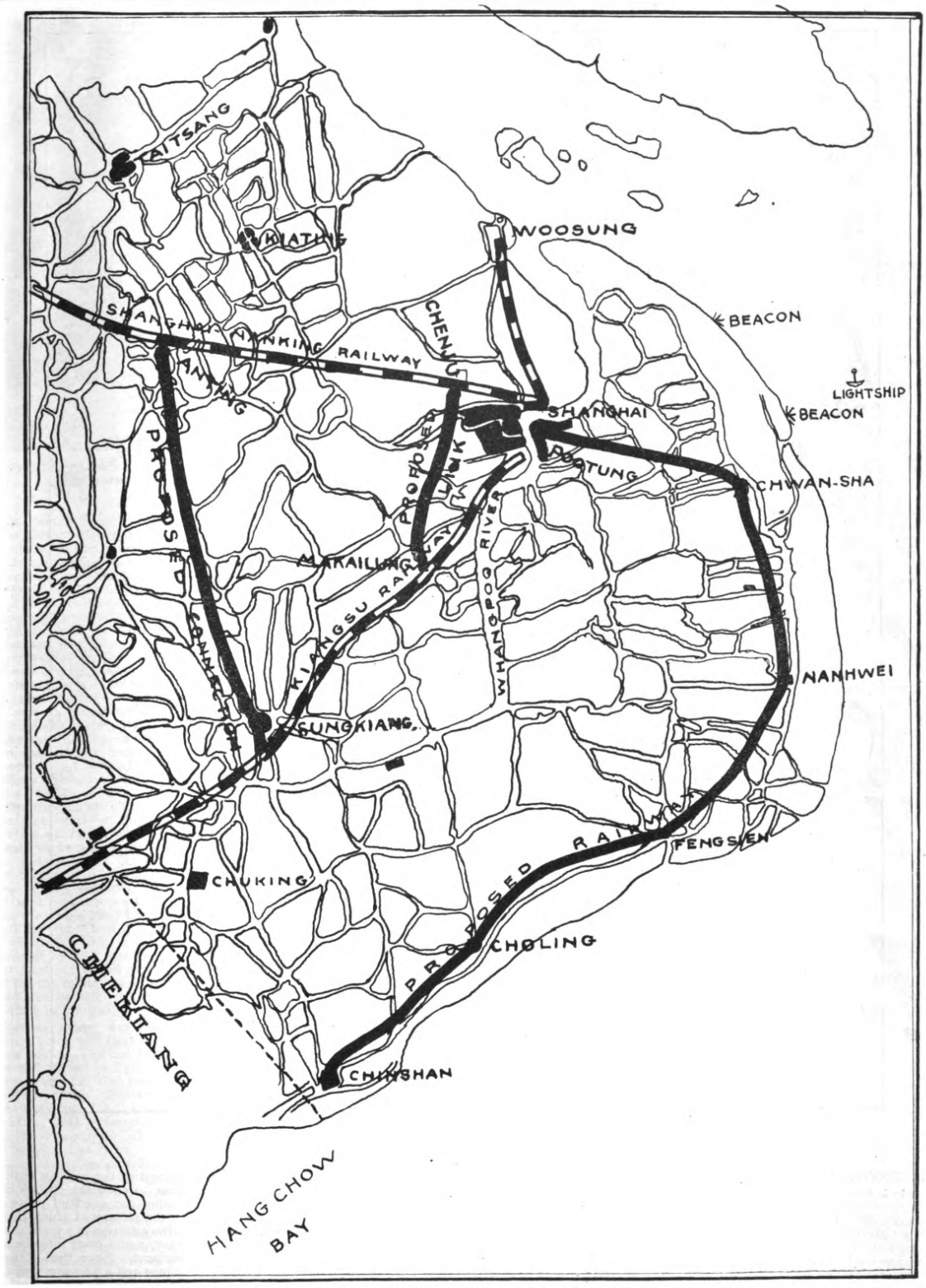
When Lord Li was appointed Minister to Great Britain and the company lost his guiding influence, no further funds were forthcoming from the shareholders. A little was secured in the form of rice taxes paid by the Cantonese rice merchants of Wuhu. As this was hardly sufficient to keep the numerous Chinese staff in salaries to idle their time away, hope was abandoned of completing the road under its present management. The Foreign Engineer therefore resigned and the work was paralyzed The Northern and the Southern factions are still fighting. No work is being done and the case seems hopeless until such time as Lord Li returns from England and infuses some new life and horse sense into his provincial followers.

Under the management of Mr. Muller it was estimated that the cost of line including rolling stock would not exceed £5500 per mile ($27,500 gold), and this figure was not exceeded in the twenty miles completed to date.

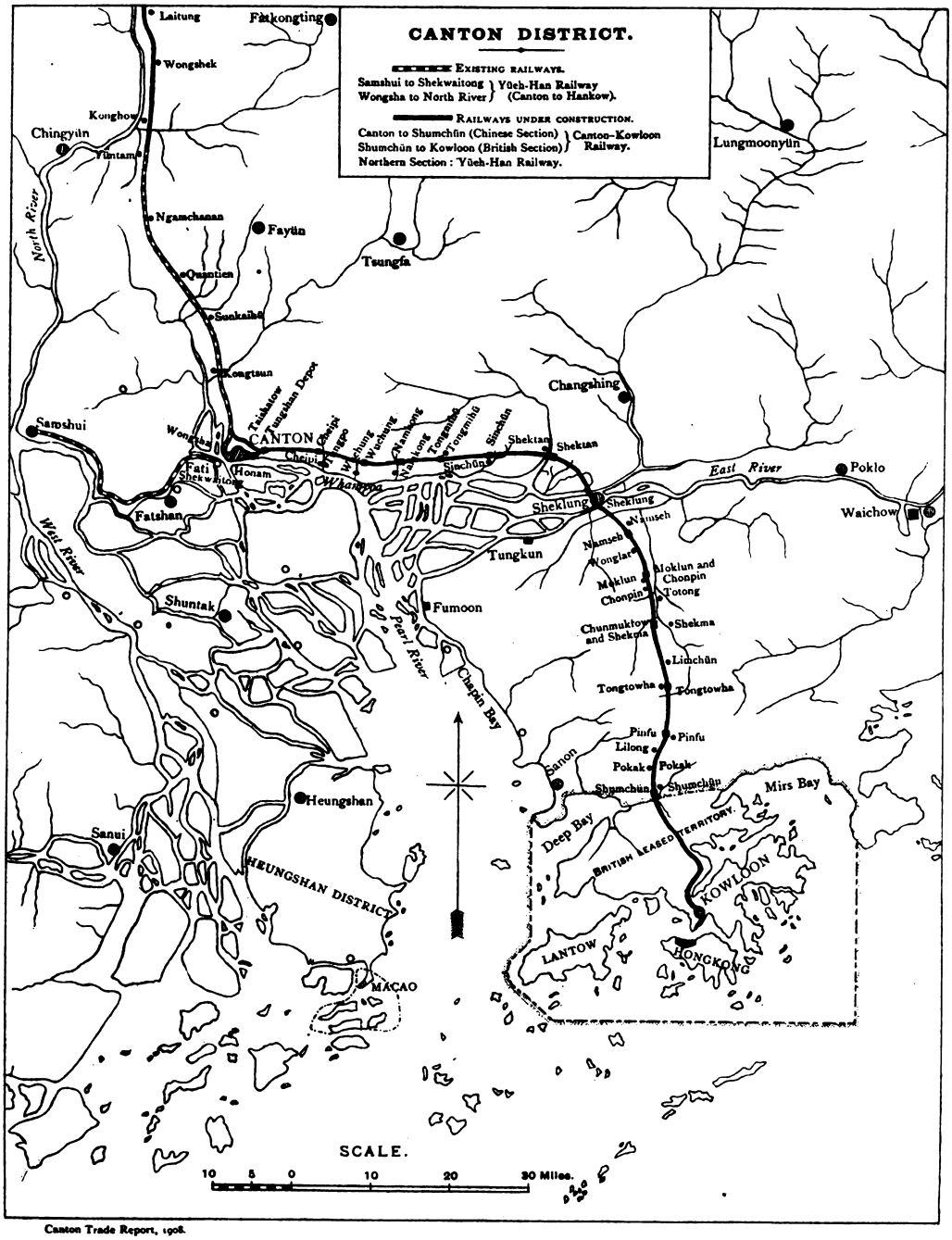
The specifications were based on the report made to Lord Li by Mr. Ginnell of Paulings, Ltd., who advocated a line similar in characters to the "Outside wall" or Manchurian extensions of the North China System, with such modifications as were necessary to meet Anhui conditions.

RAILWAY STATION AT SHEKWAITONG, CANTON

NATIVE CITY, KENGMEEN



MAP SHOWING LINE OF PROPOSED RAILWAY FROM SHANGHAI (POOTUNG) TO CHINSAN, ALSO THE PROPOSED LINK BETWEEN THE SHANGHAI-HANGCHOW-NINGPO RAILWAY, KIANGSU SECTION, AND THE SHANGHAI-NANKING RAILWAY



Canton Trade Report, 1908.

THE KOWLOON-CANTON RAILWAY

The latest word with regard to the opening of the British Section is its postponement from the date originally proposed rather indefinitely, but July 15th seems to be about the date upon which most of authorities agree that this section will be open for traffic. The publication of an advertisement inviting proposals for the supply of refreshments at the various stations along the line in the *Government Gazette* indicates that the final touches are being applied preparatory to that event. At present writing no official announcement of the date of opening has been made.

Up to February this year the expenditures exceeded the original estimates by $4,800,000, Hongkong Cur., and $2,100,000 was appropriated to cover the estimates for 1910. The cost to that date amounts to over $12,271,495.

According to the report of the Chief Resident Engineer, E. S. Lindsey, M.I.C.E., under date of February 28, 1910, for the year 1909, it was the intention of the railway authorities the previous year to open the British Section for traffic by using the overland route which runs parallel to the railway at Hung Hom and to place the railway station in a position which, though temporary, would come into the scheme of final development. Since then ideas have undergone a change and a new proposal regarding final location of terminus has been submitted to the Secretary of State.

"Until connection with Canton is established,"

PRESIDENT CHEUN YEE HEE, OF SUN NING RAILWAY, IN CENTER OF DOORWAY

he writes, "nothing much in station accommodation at Kowloon is required for the light local traffic which, in the interests of the railway, it is advisable to work up. Pending the decision as to the location of the terminus, therefore, we may take it that for all practical purposes a flag station in Salisbury Road, close to the ferry proposed in the scheme lately sent forward, and another at Hung Hom will meet all the Kowloon and Hongkong requirements.

"There remains a good deal to be done before the railway can be said to be completed. Stations and quarters, or both, have to be built at all stations. Workshops and watering arrangements have to be erected and the reclamation must be finished before the goods yard can be laid. As regards the shops, nothing can be done in this respect because the site for the workshops is not leveled off nor is the steel work likely to be out before April. Girders for bridges 4×8 will not be out to the end of March.

"Before through opening to Canton, however, the contract time for the completion of the reclamation will have elapsed and the passenger and goods yards will be ready. As the British Section will be ready for opening before the Chinese Section it is proposed to open the line as soon as the essentials are ready, with the station arrangements as intimated above, in order to work up a local traffic and to transport material for the Chinese Section if required, all of which will help in earning revenue. It is impossible to fix a date at present, but it will take at least six weeks after the underframes are out for the rolling stock to be ready, so that it would not be safe to reckon on anything earlier than July (1910)."

The above report was submitted February 28, 1910. Since that time satisfactory progress has been made. The last brick was laid in the Beacon Hill tunnel in February and the materials necessary for the temporary equipment have been received. The estimates for the year include $585,606 for excavations in Hung Hom cutting and reclamation, and for general earthwork $1,492,974. The length of the British Section is 22 miles.

Work on the Chinese section is progressing. About 30 miles were in operation from the Canton end in March and about 50 miles of the right of way had been purchased and entered upon at the end of last year. As soon as the British Section is completed to the boundary, work will begin on the Kowloon end and with the transportation of facilities afforded by the British line it is expected that great progress will be made. It is also expected that the Chinese Section will be opened for traffic July 1, 1911. The Chinese Section is 89 miles in length making upon the completion of both sections a direct connection between Hongkong and Canton over a line of 111 miles.

THE CANTON-HANKOW RAILWAY

The latest word on the prospects of the Canton-Hankow Railway refers to the agreement among the different groups of British, German, French and American capitalists as to the distribution of a Chinese loan of £6,000,000 to be utilized in the construction of the Canton-Hankow and the Hankow-Szechuan lines. The preliminary steps towards the arranging of the loan with the Peking authorities had been suspended on account of the impossibility of the different groups interested agreeing upon the allotment by nationality and the conditions under which the construction would be carried out. With the satisfactory adjustment of these differences, the preliminary steps will be resumed at Peking towards a conclusion of the loan agreement. The foreign ministers of the countries interested have been requested to open negotiations for the early conclusion of the contract. It is understood, that in view of the apparently growing influence of those opposed to a foreign loan in Hupeh and Honan where the money is to be spent in the construction of the Canton-Hankow, that the matter will be pressed. According to the best information, the terms of the agreement are the most favorable of any loan arranged with China.

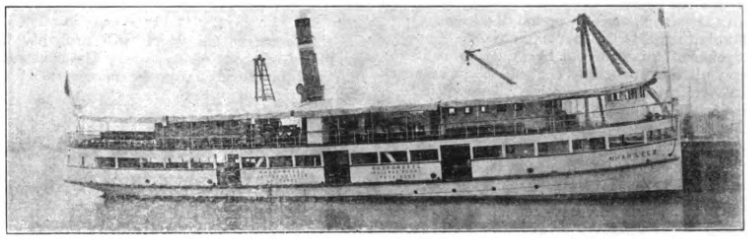
According to the *London and China Express* the bankers announce that the agreement between the four groups gives equal opportunity to furnish materials and in tendering for supplies.

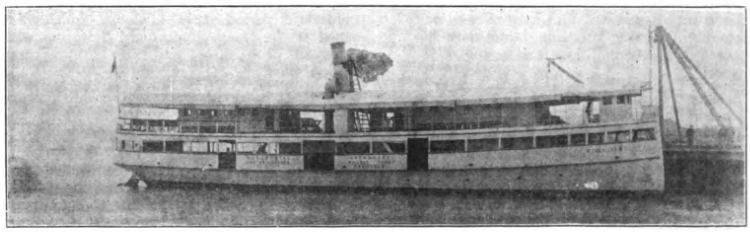
The British secure the engineering rights for the Canton-Hankow section and the Germans for the Hankow-Ichang-Kwangsui loop with the exception of 200 kilometers over which the Americans are to have engineering rights. The French have no engineering rights. The line from the head of the Yangtsze to Chengtu is equally divided and on other extensions, as to the chief engineer and purchasing agent, the selection will be made first by the United States and then Great Britain and France in sequence. The amount of the loan will be divided equally among the groups.

Since 1905 the construction of the line in Kwangtung has been under the direction of the Canton Commercial Company, and the sections in Hunan and Hupeh were to be built by the officials and gentry of those two provinces. It might be said that activity has been confined to the Cantonese company, the progress made on the Hunan and Hupeh sections being very disappointing. It might be said that the greatest harmony did not prevail among the stockholders of the Cantonese Company, but under the direction of Sir Liang Cheng Tung more satisfactory results were had.

At the end of May this year construction work was being carried on over about 150 miles of line and over 50 miles were open from the Canton end northward. The construction in sections and at various stages of progress has reached Chu Chou and from that point to the Hunan borders engineers have been busy on final location. Of the main line about 115 miles have been laid with steel and utilized in furthering construction.

The first branch of this line connecting Canton and Sam Shui, 32 miles in length, was completed in 1904, and a line connecting the Ping Shiang coal mines with Chu Chou, 70 miles in length





CANTON-SHEKWAITONG FERRY BOATS

was completed in 1906. The work on the main line commenced from the Canton end in 1904.

Early this Spring it was reported that the affairs of the Cantonese Company had reached a crisis. Orders for the cancellation of orders for material were issued and one of the foreign engineers dismissed. This trouble seems to have passed away and work was later resumed. Much delay is caused by the difficulty of securing land for the right of way for which exorbitant prices are sometimes asked by owners and there is no way to acquire the land except by patient negotiation. This added to the limited means of the company for pursuing the work proves a serious handicap.

The correspondent of the *North China Daily News*, writing from Chu Chou in April, stated that several engineers who had gone over the construction had expressed the opinion that the line was being too well made and that a more temporary construction would have served until the line became a revenue producer. The work of excavation had been progressing very favorably on the eighth section which includes the Blind Boy's Pass, but was suspended at that time. The correspondent also states that tons of scaffolding had been erected preparatory to sinking foundations for the Yingtak Bridge which is 700 feet in length. North of Shadow on the eleventh section rock excavation work was progressing.

The Canton-Hankow line as surveyed is about 700 miles in length and the branches will aggregate 150 miles.

THE CHANG-WEI RAILWAY KALGAN-SUIYUAN EXTENSION

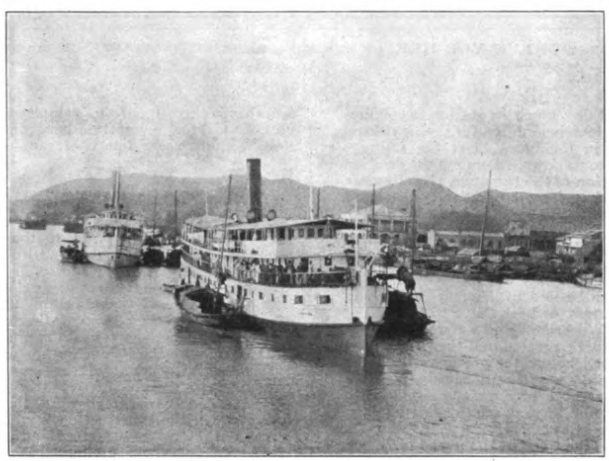
The proposed construction of an extension line of the Peking-Kalgan Railway to Suiyuan has been approved and sanctioned by the Throne according to official report. At the completion of the Peking-Kalgan Railway preparations were made by the construction of an extension line either to Changkien or Changshui, and for this object a survey was made by the engineering staff of the Peking-Kalgan Railway of the vicinities of the proposed lines with the result that the line to Changshui was adopted which will be of more advantage and convenience to traffic. This line will traverse Kuei-Hua, Sui-Yuan, etc., and has a length of 689 li, the cost of its construction is estimated to be Tls. 10,660,000. As cold winfer will set in very early in the year, when work can be carried on for a period of 6 months, it will take eight years to complete this line. The income of this line will be immense as it traverses all the important centres of markets for coal, grains, skins and other commodities in addition to the heavy traffic along this line. The funds for the construction of this line are supplied by the profits of the Peking-Kalgan Railway.

To construct a great trunk line passing Mongolia to Kulon by extending the Peking-Kalgan line has been the desire of the Chinese Government for many years, says the *China Tribune*, but if the line were built in a direct northerly direction from Kalgan, it would pass through a district lacking substantial traffic. It was then proposed to extend to Mai-Mai-Cheng, and Assistant Engineer Yu Jeng Feng was dispatched to survey the line, and upon his report action has been taken and a route decided upon.

At first two lines were taken under consideration, one running to the south and the other to the north approximately. Then a compromise route was agreed upon that would run from Kalgan in a south-westerly direction passing through Tien Chin, Yang Kou to Ta T'ung Fu, Shanshi. Then from the last named point in a northerly direction through the Sheng Kou Pass outside the Great Wall to Feng Chin from which point the line would run west to Mai-Mai-Cheng and Wei Yuan Cheng after passing through Ning Yuan and Ho Lin Ko Lu. From Mai-Mai-Cheng a branch line is to be built to Ho Kou on the bank of the Yellow River.

This route, while circuitous compared with the direct northern line proposed, taps the rich coal deposits near Ta T'ung Fu and the rich farming districts in the north and south which will make it pay from the beginning of operations. It will also have the benefit of all the carrying trade of the leading commercial centres of Mongolia and at the same time aid in the colonization of the rich and fertile regions not yet inhabited. Besides the minerals, grain, etc., the fur, wool and hides traffic is enormous and will increase as the benefit of rapid transit is appreciated. Even as a feeder to the Peking-Kalgan, already a paying railway, it would be a good investment.

The line from Kalgan to Wei Yuan Cheng is 689 li (230 miles) and from Mai-Mai-Cheng to Ho Kou 111 li (48 miles). Tls. 2,000,000 will be made available annually from the profits of the Peking-Mukden and Peking Kalgan for this construction which will probably be completed in about eight years. The construction will be directed by the management of the Peking-Kalgan line.



WATERFRONT AT KENGMEEN

STEAM DEVELOPMENT

Mr. R. H. Thurston of Cornell University states in an article written by him for the *Encyclopedia Americana* that, in the year 120 B. C., there was found at Alexandria a manuscript which proved to be a Hero's "Pneumatica,' and although the power of steam in connection with some sort of an engine has undoubtedly been known to mankind since the prehistoric period, this, however, is the first record of the steam engine and describes what is, in all probability, the most simple steam turbine possible of construction.

There is, however, very little record of anything like a steam engine of today until 1705 when there was patented by Thomas Newcomen and his partner, John Calley, the first properly so-called steam engine. This consisted of a steam cylinder and piston actuating a beam above, from which was pendant the pump rod operating the pumps in the shaft of a mine; it was always used as a steam pumping engine, but was later improved by the addition of various valuable devices which gave James Watt his fame and fortune. This type engine became known later as the Cornish engine, and after Newcomen's death, was further improved in details by Desaguliers and by Smeaton. In 1718, the first automatic valve-motion was carefully designed by Henry Beighton. This, with Watt's invention of the separate condenser, the steam jacket, double-acting engines, the governor, etc., step by step, produced the engine that is the real basis of those we have in use at the present time.

From the small engines of the early part of the 19th Century, to those of the present time, is a change a little hard to appreciate, for it is estimated that the work of the world is performed by steam engines mainly, probably amounting to 150,000,000 h. p and equivalent to the working power of several times the population of the globe, if employed in manual labor.

The wonderful growth of the steam engine is further evidenced by a letter recently received from the Penberthy Injector Company of Detroit, stating that on March 29th, 1910, Injector number six hundred thousand (600,000) was stamped and recorded ready for delivery. When we stop to consider that the above company, the largest manufacturers of injectors in the world, has since 1887 made 600,000 of their automatic injectors, we obtain some idea of the large H. P. of the boilers which must be in operation at the present time, for it has been carefully estimated that 600,000 (size 2½") GG Penberthy Injectors would force into a boiler against 90 to 100 lbs. pressure over 1-3 of the amount of water that is constantly going over Niagara Falls, which is approximately 125,000,000 to 150,000,000 gallons per minute. This when transformed to steam at 70 lbs. pressure is sufficient to develop power amounting to approximately 700,748,661 horsepower, or very near five times the estimated horse-power of the world's steam machinery.

Should the growth of steam power increase in the next hundred years as it has in the past, we will have as a result a combined horsepower capable of performing work the magnitude of which would be so great as to be almost inconceivable to the average person of to-day. The likelihood of the development in steam power during the next century, however, is not so much in a larger number of engines and boilers, although this is, through the natural growth of the universe, inevitable to a certain extent, but rather in an increased efficiency in those power plants which are to replace those that, because of age and wear, are constantly being discarded.

FAR EASTERN RAILWAY NEWS

FINANCING CHINA'S RAILWAYS.—A Peking dispatch is to the effect that H. E. Hsu Shih-chang, President of the Board of Posts and Communications, has decided to arrange for a loan of Tls. 400,000 from the Deutsch-Asiatische Bank to construct the Ichow-Kiaochow branch of the Tientsin-Pukow, owing to the lack of funds available. President Hsu Shih-chang has also decided upon a program of encouragement of railway companies organized by local capital, by sending a number of experts to investigate the condition of the railways with the object of financing the different projects by taking them over where funds are not available.

DAIREN RAILWAY WORKSHOPS.—A large order for equipment for the new railway workshops of the South Manchuria Railway at Shakako, near Dairen, has been secured by Messrs. Thomas Robinson & Son, Ltd., of Rochdale, against a large number of American, German and British competitors. The order includes the equipment of three departments: one, for the sawmill and woodworking machinery for manufacturing the heavier timbers for railway carriages and cars, a plant for the lighter construction and interior fittings and a pattern department. The plants will utilize electricity for motive power.

THE SHANTUNG RAILWAY DISPUTES.—Owing to the failure of negotiations towards a settlement of the disputes over railway questions between the German authorities and the Governor of Shantung, the German minister has recommended that the matter be referred to Berlin and adjusted through the Chinese minister there. The question at issue between Germany and China is, whether or not the railway from the Chefoo to Kaiphong *via* Weishen shall or shall not call at Kaomih. The Germans naturally desire that the line shall call at the last-named place, and we do not understand that any substantial objections to such a route have been formulated. But it appears to be thought that the future of Chefoo depends upon the decision, for if the road be deflected to Kaomih, Kiaochou will usurp the place hitherto held by Chefoo.

THE SHANGHAI-NANKING ESTIMATES FOR HALF-YEAR ENDING DECEMBER 31, 1910.—In submitting the estimate for last half of the current year General Manager A. Pope states that the increases in expenditure are the natural outcome of the increasing age of the line and the necessity of maintaining the equipment in condition. "The increase in expenditure in locomotive, carriage and wagon department, though mostly for coal," he writes, "consequent on the increased train service is higher than it should be; not because of the want of care of the executive officers, who have done well, but because our rolling stock is not being treated fairly. 'The stitch in time which saves nine' is not possible because all our rolling stock is running every day. All our auxiliary forms of rolling stock such as cattle trucks, ice and fish trucks, horse boxes, 75 of our covered wagons, etc., are makeshifts built with packing cases and other workshop cuttings. These make heavy maintenance." "And further," he says, "I cannot help pointing out that the amazing development of the coaching traffic (suffering from no other disabilities than fair competition, which we have beaten), fortifies my firm conviction that if the goods traffic were freed from its present discriminate incubus, the Likin, it will develop under the same administration that foster the coaching traffic, with like results, thus making the line pay its guaranteed interest of 5% or more."

We quote the following:

"The estimate of Coaching earnings allows for an increase of $78,000 in round ordinary figures. Under ordinary conditions this would appear to be somewhat optimistic, but the development during the past six months has been so much in excess of expectations that this fact, coupled with the opening of the Nanking Exhibition, gives every hope of the estimate being realised. The Exhibition ought to bring us a good deal of traffic in the coming half-year, as though opened in the early part of this month, it is not likely to be really for some little time yet.

2.—In estimating the Goods earnings a small allowance has been made for a development in traffic. It is also hoped that a portion of the shortage in Tribute rice which has fallen below last year's figures by about $35,000, will be offered for carriage before the close of the year.

3.—Great difficulty has been experienced in framing this half-year's budget owing to the lack of an adequate traffic under the head Goods. The General Manager has pointed out that the cost of Abstracts A, B and C are steadily increasing because of heavier repairs being necessary, and though in past half-years the phenomenal rise in Coaching traffic has compensated for this it is not likely to continue to do so much longer.

The following table shows the development of Coaching traffic as compared with Goods.

	June, 1908 Actuals	December, 1908 Actuals
Coaching, (a)	677,062	716,529
Goods....(a)	96,988	44,231

June, 1909 Actuals	December, 1909 Actuals	June, 1910 Probable	December, 1910 Estimated
780,699	771,558	850,000	850,000
115,609	73,501	120,000	100,000

(a) Chingkiang-Nanking section on 1st April, 1909. The following table is of interest as showing the estimated percentages of working expenses to gross earning for successive half-years:—

Half-Years	Estimated	Actuals
June, 1909	68.33	66.12
Dec., 1909	72.81	69.18
June, 1910	64.85	
Dec., 1910	70.78	

4.—It will be noticed that only under Abstract A has any appreciable deduction been made for supervision charges debitable to Capital Account. This is due to the expected completion of the major portion of the works connected with the Woosung Scheme during the half-year.

The marked increase under head III is due to the necessity for heavy repairs to approach roads at Shanghai, Chinkiang and Nanking and in the Cho Lou Kou cutting. Under head IV the rise is due to increasingly heavy repairs and repairing.

5.—Under Abstracts B and C provision is made for the greatly increased running expenses due to the extra train service provided for the Nanking Exhibition, and also for the increasing cost of repairs to locomotives and vehicles, especially the latter.

6.—In Abstract D the increase under head I is due partly to increases of pay and establishment and partly to provision for passages and acting allowances given for leave vacancies. Under heads II, III and IV provision is made for the increased train service.

It is satisfactory to note reduction in the cost of Handling Charges which is due to the rates having been considerably reduced this year.

7. In Abstract E. the increases under the head II, 1 and 2 are due to the same reasons as for I in Abstract D. Under the head II, 3 the increase is due to a small share only of the total cost being charged to capital.

The increased provisin under the head II, 13 is due to the reconstruction of the Telegraph line.

8.—In Abstract G. under head VI provision is made for hiring five coaches built for the Kiangsu Railway. Under head VII the rise is due to an expected increase in the amount of small coin to be received.

H. MIDDLETON,
Chief Accountant.

BUDGET ESTIMATE OF REVENUE AND EXPENDITURE

HEADS.	ACTUALS for half-year ended December, 1909. $	BUDGET ESTIMATE for half-year ended December, 1910. $
Receipts.		
Coaching traffic earnings	771,558	850,000
Goods traffic earnings	73,501	100,000
Telegraph traffic earnings	226	250
Sundries traffic earnings	34,751	24,750
Total Earnings (I)	880,036	975,000
Add decrease or deduct increase in balance of "Traffic Account" as per Appendix A	720	5,000
Deduct decrease, or add increase, in balance of "Foreign Railways" as per Appendix A	233	50
Total Receipts (II)	879,549	980,050
Maintenance of Way, Works and Stations (Abstract A)	*Percentage on gross earnings.* 10.92	102,648 106,500
Locomotive Expenses (Abstract B)	20.21	169,689 197,000
Carriage and Wagon Expense (Abstract C)	5.79	46,517 56,500
Traffic Expenses (Abstract D)	13.50	112,082 131,500
General Charges (Abstract E)	17.44	154,321 170,000
Flotilla Expenses (Abstract F)	0.05	176 500
Special Expenses (Abstract G)	2.87	23,392 28,000
Total Working Expenses (III)	70.78	608,825 690,000
Add increase or deduct decrease, in balance of "Misc. Advances" as per Appendix B		....
Deduct increase, or add decrease in balance of "Demands Payable" as per Appendix B		15,016 5,000
Net Expenditure (IV)		623,841 695,000
Net earnings (I—III)		271,211 285,000
Net receipts (II—IV)		255,708 285,050
Number of miles open for traffic on 31st December, 1909		203
Opened during half-year ended 30th June, 1910		Nil.
Total on 30th June, 1910		203
Expected to be opened during half-year ending 31st December, 1910		Nil
Total likely to be open on 31st December, 1910		203
Average number of miles expected to be open during the half-year ending 31st December, 1910		203
Train miles expected to be run during half-year ending 31st December, 1910		485,000
Cost per train mile, deducting earnings from Telegraph and Sundries.		1.37

Considered and approved

M. Y. CHUN,
Managing Director,

A. POPE,
General Manager.

Dated, Shanghai, 21st June, 1910.

SLEEPING CARS FOR THE SHANGHAI-NANKING RAILWAY.—The workshops of the company turned out its first sleeping coach June 16 and it was commissioned for the passenger traffic to the Nanking Exposition. The car is 68 feet in length supported on two four-wheel bogies

with accommodation for 17 persons. It is divided into two sections, eight berths being reserved for ladies.

The berths in the male compartment are constructed on the sides of the car and in the ladies' compartment are in pairs with the head to the side of the car. There is plenty of provision for ventilation and the car is lighted with electricity and has an electrically installed bell service. Two of these cars are now reported completed and in service. One of these cars is reserved for foreigners and the other for Chinese.

SZECHUEN-HANKOW RAILWAY CONSTRUCTION.—A dispatch from Ichang is to the effect that 100 miles of this line between Ichang to Hsiang Chi has been laid. The Engineer in Chief, H. E. Jime Tienyue, states that, owing to the heavy tunneling, this road will prove very expensive and will cost about over Tls. 110,000 a mile.

KOREAN RAILWAYS.—Reviewing the progress of railway construction in Korea the *Chamber of Commerce Journal of Yokohama* says:

"The estimates of the present fiscal year allot 3,500,000 yen for the construction of railways in the Peninsula. Reconstruction work on the Seoul-Wiju Line will mainly be carried on between Tosong and Hanpo, some 20 miles in length, and between Tongim and Yangchaik, of about the same length. These sections of the line were rather rapidly completed at the time of the Russo-Japanese War, and it is expected that the incline will be altered from 1-40 to 1-100. The work on the line will be completely finished in the course of next year, at a cost of 2,000,000 yen. Following this work, there is also the reconstruction of temporary bridges and embankments, which will cost 1,000,000 yen. Work is now being carried on practically along the whole line. The construction of railway stations is also to be commenced this year, the total amount for this work being estimated at 5,000,000 yen. This work will extend over three years. The estimates for the construction of the Seoul-Wonsan and Honan lines for the present fiscal year amount to 235,000 yen. The land survey for both lines has already been commenced, and actual construction will be commenced in September this year, the work of the former being started at Yongsan and of the latter at Taichon. The projected Seoul-Wonsan line, which is 136 miles in length, will pass through the districts of Euichongpu, Yunchon, Cholwon, Pyongkang, and Punsulyong, while the main line of the Honan railway will go to Kunsan through Kangkyong and a branch line to Mokpo via Chyongeup Changsong and Laju. The total length of this line is about 174 miles. The railway authorities intend to complete the work on the Honan railway first, building temporary bridges, etc., at first. It is hoped by this means to open the line to traffic after five or six years. The construction of the Pyongyang-Chinnampo line, 34 miles and a half in length, was started last year and the work is now being vigorously pushed on. It is expected that the line will be opened to traffic in the course of this year."

PHILIPPINE RAILWAY CONSTRUCTION.—Arrangements are being completed for the official opening of the Philippine Railway Company's line on the Island of Panay, August 27, and it is proposed to invite Secretary of War Dickinson to officiate at the ceremonies during his visit. This line is 72 miles in length and all but a gap on the northern end of about nine miles between Dao and Panitan is now completed. This company recently inaugurated a through rate agreement from points along the line in Cebu and Panay to Manila and other coastwise points and vice versa with the Compania Maritima, Messrs. Ynchausti y Ca. and the Interisland Express Company. The agreement goes into effect July 20.

GREAT NORTHERN COACHES NAMED FOR PHILIPPINES.—This company has named two of its new sleeping cars for Manila and Luzon. These cars will operate between Seattle and St. Paul and are indicative of the interest of Mr. Hill in Philippine trade following his initiative in making Manila the terminus of his line of steamships.

TIENTSIN-PUKOW (SOUTHERN SECTION) CAR TENDERS.—A rush advertisement was published on July 1 calling for tenders for six first and second class composite cars and twelve third class cars. The tenders had to be in before ten o'clock on July 7, just six days after the proposals were invited.

CHINESE EASTERN TIMBER CLAIMS.—The Chinese government has agreed to compensate the company in the sum of $160,000 for new timber destroyed by the Hunghutze.

THE SOUTH MANCHURIA RAILWAY COMPANY.—At the half-yearly meeting last month the net earnings for the line amounted to yen 4,085-832 which together with the amount forward from last account made yen 6,280,804 available for distribution which was disposed of as follows:

	Yen.
Legal Reserve	204,291
Dividend to the Government	2,500,000
Dividend to Shareholders (rate 6 per cent.)	600,000
Special Reserve	1,000,000
Rewards to officials and expenses of entertainment	200,000
Brought Forward	2,316,513

This is the first term in which the railway has paid a dividend on the Government investment of 100,000,000 yen. President Nakamura expressed himself in an optimistic vein and stated that the overseas trade of Manchuria had now reached yen 200,000,000 annually. By November next he prophesied that the Antung-Mukden line would be open from Mukden to Penhsihu at one end and to Kikwanshu from the Antung end with the whole line in operation in the Spring of 1912.

THE SOUTH MANCHURIA RAILWAY STATE CARS.—The first state cars made at the railway shops of this railway were tried out last month. They cost yen 40,000 a car and were made from materials imported from England, Germany and America. The work is reported by experts to be excellent, the workmanship superb, and equal to the output of any western shop. The car has a length of 72.5 feet and is divided up into twelve compartments, each seven feet wide. There are toilet rooms each for ladies and gentlemen and also a train attendants' room. The corridor is about 30 inches in width and five folding seats are located on the side and through the entire length of the car. The partitions are removable between four of the compartments. The average compartment contains two berths in double deck and a folding table and two of them contain each four berths and a folding table.

CHINESE CONTRACTORS GET CONTRACT ON THE KIRIN RAILWAY.—Only one Japanese contractor managed to secure a contract in competition with Chinese on the construction of the Kirin-Chanchun Railway and the Chinese are elated over their success, according to a Dairen report.

THE CHEKIANG RAILWAY.—At a meeting of the shareholders of June 19, a resolution was adopted to the effect that, as the Board of Communications had not complied with their agreement to pay a deposit, that it should be cancelled and that the payments on shares for the fourth and fifth periods should be made within the fourth period. President Tang was appointed to conclude negotiations for the cancellation of the agreement with the Board.

ANOTHER RAILWAY PROPOSAL.—A project is on foot to build a railway from Shanghai to Chinshan, a distance of about 70 miles starting at Pootung and proceeding via Chuansha, Nanhui, Fengsien, Huating to Chuansha. It will be a light railway, and the estimated cost is placed at Tls. 1,000,000. An application is reported to have been made to the Board of Communications by Mr. Lee Yun-shu, chairman of the municipality of the Native City at Shanghai.

DOUBLE TRACKING THE SHIMBASHI-YOKOHAMA LINE.—The Railway Board has secured title to a large portion of the land necessary to carry out this project which includes not only double tracking the line but widening the gauge to standard as well. Tenders will soon be asked for the construction of the new bridge to accommodate the two tracks on the lower side of the Rokugo bridge. Director Furukawa of the Central Railway Superintendence Bureau proposes to abolish the present Kanagawa and Hiranuma stations and to construct a large central station to accommodate the traffic. There is some objection to this and the matter is in abeyance.

SIAMESE SOUTHERN RAILWAY.—According to the *Bangkok Times*, a large amount of the necessary construction material will arrive in August when tracklaying will commence, and by that time 150 kilometers of embankment will be ready for the rails. At the present time the engineers are devoting their attention to bridge and earth work to be prepared for the reception of materials.

P. & O. AGREEMENT WITH THE JAPANESE IMPERIAL RAILWAYS.—On July 1st an agreement went into effect providing for the issue of railway tickets at the ports of call or on board the steamers of the P. & O. for all classes of passage without extra charge for the railway journey from Yokohama to Kobe and Moji and vice versa. The Japanese Government has long had a similar agreement with the Nippon Yusen Kaisha and the Great Northern and will extend these privileges to other companies.

PUNISHING HUPEH AND HUNAN AGITATORS.—A Hankow special to the *Tokyo Asahi* says the Peking Government has just ordered Viceroy Tang to close up the Hupeh-Canton-Hankow and the Szechuan-Hankow Railway Bureaus and also to abolish the Railway School. This is understood to be the result of the strong opposition to the raising of foreign loans in connection with those projected railways. The Government knows well enough the funds needed cannot be raised among the people of Hupeh; but to avoid the brunt of their attack, it has decided to give up the foreign loan plan for the time being, to see what the Hupeh agitators will do in the matter. But, as the result of this order, the Japanese engineers in the employ of the Canton-Hankow Railway Bureau and the Japanese teachers in the Railway School will be disengaged. As to the Japanese engineers in the Szechuan-Hankow Railway Bureau they are at present engaged in getting up railway estimates. They will be discharged at the end of three months when the compilation of the estimates will be finished.

THE CHINCHOW-AIGUN RAILWAY.—The British Consul at Newchwang in his report states that "the importance of Newchwang as a commercial port should be further enhanced by the construction of the proposed railway from Chinchow to Aigun, for though the intention of the Chinese Government is to make Hulutao, a natural and ice-free harbour on the coast 35 miles south-west of Chinchow, the sea terminus of the line, there can be no doubt that Newchwang will obtain a considerable portion of the trade which the line should soon develop along its route. At present Hulutao is a wretched fishing village which it will take many years and a considerable expenditure of capital to convert into an important commercial base. Chinchow itself is a small but fairly flourishing town, situated about 100 miles west of Newchwang, with which it is connected by the Imperial Chinese Northern Railway. The proposed line is intended to develop the Mongolian districts, lying west of the Japanese and Russian railways, in Manchuria as far as Tsitsihar, where it meets the Trans-Siberian Railway. Thence the line is to be continued due north

PHILIPPINE MINING NEWS

THE RAGAY GULF EXPLORATION COMPANY.—A new mining district of the Philippines has sprung suddenly into notice through the incorporation of the Ragay Gulf Exploration company with a capital of a million pesos to test and develop 5,000 acres of placer ground and other properties located by Mr. Henry Bode and associates during the past two years. The company has sent a mining engineer, graduate of the Michigan College of Mines, into the field to test the placers of which there are three main groups, that accurate information may be secured and to determine what style of dredge will work to best advantage.

Ragay gulf is on the Pacific Ocean side of the island of Luzon and the new gold field is just across the range from the Paracale and Mambulao districts, about 25 miles away as the crow flies. Little is known as to the geology of this side of the range as yet, although rock slides of the formations are now being made under the direction of geologists of the Bureau of Science who investigated the field. The geologists tested the creeks along which the placer ground lies and found gold, but made no tests of the placers. Borings made by the locators showed from 84 centavos to ₱2 generally, while some tests made by persons who desired options ran much higher, some up to ₱20.

The company, however, in drawing up its prospectus, has thrown out all these high value tests since the conditions under which they were made are not known.

Beside the placers, the company owns a group of copper claims on which float assaying five per cent copper has been found. Tunnels are now being driven to get under the strong hematite cap which is believed to cover veins of the red metal. A large area of coal lands also has been located and a ten inch vein has been found. Float on the property indicates much thicker veins and the company has been advised by the Division of Mines to make further investigations. Shafts will be sunk on the coal lands at once.

One feature of the promotion work of the company is that all stock other than a small block issued to defray the preliminary testing and early development work, has been placed in escrow to prevent any of the smaller holders from selling stock under the market price and thus interfere with the company's plan. The policy of the company now is to determine accurately what values it may expect to return to the purchasers of stock before buying expensive machinery that might, as has been proved in the case of other companies, prove unsuited to the ground. The officers are: Mr. Henry Bode, president; Mr. D. R. Williams, secretary and treasurer. Directors are: Mr. C. M. Cotterman, Insular Director of Posts; Mr. George C. Sellner, real estate broker, Mr. José Moreno Lacalle, Attorney, and Mr. P. L. Bryant.

THE GOVERNMENT COAL MINES ON BATAN.—Mr. J. H. Williams, C. E., of the Quartermaster's Department has been ordered to Ligilan, Albay, to take charge of construction work in connection with the coal mines there. It is understood that the development work will be pushed on the deposits and more extensive investigation made of varieties of coal to be found. Secretary of War Dickinson proposes making an investigation of the property during his visit to the Philippines.

NEW PROMOTING FIRM.—Mr. A. Heise, formerly general manager of the Philippine Exploration Company, has resigned and is now associated with Mr. R. Leneau of Manila and will continue promotion work in the islands. Mr. Heise is the pioneer promoter of mining in the Philippines and has met with unusual success in interesting capital in development. The prospects of unusual activity in mining there promises a bright future for this enterprising firm.

PHILIPPINE EXPLORATION COMPANY'S NEW OFFICES.—The offices of this company and also of the San Mauricio Gold Mining Company have been removed from Plaza Moraga to the Paris Building at No. 34 Escolta, Manila. Mr. G. T. Bridgeman, the manager, arrived in Manila during the month from Shanghai and proceeded to Paracale to look over the company's properties. Mr. G. C. Ripley of the engineering staff is in charge of the office during Manager Bridgeman's absence.

REPORT ON MASBATE PROPERTY.—Mr. Blake, who has been examining the Masbate properties upon which the Philippine Exploration Company has an option, submitted his report recently and we are advised that this report has been forwarded to Shanghai. It is expected that its nature will be given out in the near future.

PARACALE DREDGING.—The Stanley Dredge has been active during the month and 140 ounces are reported. The company has not yet reached the richer deposits and the savings are only nominal. There is prospect that the other dredges in the Paracale district will soon have gotten over their troubles. The Paracale Gold Dredging Company has had to suspend work while they constructed a new dredge. Reports from the district are to the effect that the dredge which has double the capacity of the old one is now at work and that the future looks bright for large returns. The pontoons are built of hard wood and covered with felt and tar below the water line to protect the wood from insects and it is expected that they will serve indefinitely. The crushing plant and concentrators ordered by the company to mill the quartz taken from the ground are now on the ground and will be installed.

HEISE ON THE SAN MAURICIO.—Owing to the many rumors in circulation regarding the San Mauricio plant, at the request of the *Free Press*, Mr. Heise, then general manager, gave out the following statement:

"At the San Mauricio mines the usual delays incident upon starting operations, at a new mine and in a new country, have inevitably postponed the day when both the mine and the mill will be running at full capacity. Local provisions for fuel and water have proved inadequate; and to run at a reduced capacity would have been an unwise and uneconomical procedure. It has therefore seemed best to await the installation of the tramway, the construction of cascos to handle fuel, and the arrival of a sufficient pump to supply water. The mill will not be started until it can be run continuously and at its full capacity; it may be another month before the necessary arrangements have been made therefor.

"In the meantime, development work and the blocking out of ore is being continued. In this connection it is safe to say that none of the inflated rumors heard in Manila are true—be they concerning $500 ore suddenly discovered in the lower levels, or be they reports that it has suddenly been proved that there is no ore whatever there."

NUEVA ECIJA PLACER.—It is understood that Messrs. Burlingame Johnson and D. M. Carman, representing American capitalists, have secured options on a large tract of placer ground in Nueva Ecija, the preliminary tests of which are reported to have run from 80 centavos to ₱1.20. Several thousand acres are included. The most of the ground has been undertaken under contract to purchase after proper tests have been made and some of it under option of working agreement with percentage of gross receipts to owners should the ground prove satisfactory. While the owners of the ground are very conservative in their estimates, it is believed that Nueva Ecija has a very bright future in placer mining. In most of the tests made a rather marked trace of platinum was found. The field is easy of access and no transportation problems. Plenty of wood and water are available and health conditions most desirable. The options run for a period of six months and an engineer will be on the ground within sixty days.

THE MANCAYAN COPPER.—After a preliminary reconnaissance in which no boring or active testing was made of this valuable copper property, the Tellus company permitted its option on the property secured from the Lepanto Company to expire last month. The interests of the Lepanto Company in the property at present consists largely of options from owners and it is believed that the Tellus people propose waiting for those options to expire so as to deal direct with the owners. It is understood, however, that the Lepanto Mining Company proposes to reorganize with a view to taking up the options and continue in control of the properties. So far as can be learned no counter proposition has been made by the Tellus company. The company's representatives are still in the Philippines and are active looking up other mining prospects. The Mancayan copper deposits are the largest known in the east and the only drawback to their development has been capital as the difficulties of transportation can only be surmounted by large investment. It is understood that several interests are desirous of opening negotiations to secure the control of the property under a development agreement.

MINING DIVISION EQUIPMENT.—The division is negotiating for the purchase of a two stamp mill, concentrating table and grinding pan for the use of the Division.

BIRKETT & HOLDEN'S REPORT.—Of the month in mining Messrs. Birkett & Holden of Manila make the following announcement:

"We understand that quietly and privately quite a lot of movement has been going on in Benguet Mining and many claims in this district have recently changed hands. In this way a fair amount of local, China coast and American capital has been introduced, but it is not until some of the Companies get busy, install machinery on their claims, and practically demonstrate the richness of their properties, that any important movement in Stocks and Shares on the open market is to be expected.

"The Bua Mine is closed down pending reconstruction of Plant rendered necessary by the typhoon and floods of last October. The May clean-up resulted in 800 ozs. of gold.

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to Aigun, a small town on the Amur River, a few miles east of Blagovestchensk. Much of the country to be traversed is poor and subject to drought, and very little of it is under cultivation, but there are many districts along the route of great natural fertility and some with considerable mineral possibilities. From an agricultural point of view, the country west of Changchun, in the neighbourhood of Taonanfu, is the most promising, and that between Tsitsihar and Aigun is believed to be richest in minerals. There are, however, indications of very excellent coal within 100 miles of the starting point of the line at Chinchow.

CANTON-HANKOW RAILWAY REPORT.—The latest news from Peking is to the effect that the Board of Communications has memorialized the Throne about the administration of this line and has ordered Chiu Shi Chang to prepare a report for the information of the Board from the investigations made by Lung Nim Cheong.

CONNECTING THE KIANGSU RAILWAY WITH THE SHANGHAI-NANKING.—The Board of Communications has asked the Kiangsu Railway officials to consider a proposition to connect their line with the Shanghai Nanking and urged the advantages that would accrue. It was decided at a meeting of the company that a survey would be made of the route from Sungkiang to Anting with a view to securing a comprehensive idea of a line connecting by way of Chuchiako and that a report of the result be submitted to the Board.

China, Manchuria, Japan, Indo-China, Siam, Straits Settlements, Malay States, Burma, India, Malaysia, and the Philippines

THE FAR EASTERN REVIEW

VOL. VII.—No. 3. MANILA, SHANGHAI AND YOKOHAMA, AUGUST, 1910. 50 Centavos Philippine Currency 25 Cents, U. S. C.

H. I. H., Prince TSAI-TAO

Younger Brother of the Prince Regent and of Prince Tsai Hsun. In Command of the Imperial Guard Corps, Now in Foreign Countries Studying Military Affairs.

America in China

Chinese Army and Navy

General News and Comment

Manila's Water Supply and Sewage System

Pioneer Mining Enterprise in China

ENGINEERING
COMMERCE ❦ FINANCE

MONEY FOR THE TIENTSIN-PUKOW.—The President of the Board of Posts and Communications has advised that he will appropriate the necessary money from the profits of the Imperial Railways of North China to cover the cost of construction on the Northern Section until the supplementary loan may be arranged.

RUSSO-JAPANESE FREIGHT TRAFFIC TREATY.—Councillor Kinoshita, of the Japanese Railway Board, is at present in St. Petersburg attending the negotiations for the conclusion of freight agreement in connection with their respective railway interests.

RAILWAY FROM KALGAN TO JEHOL.—A Peking dispatch is to the effect that Tls. 3,000,000 have been raised by the Viceroy of Chihli and the Railway Board to defray the cost of this line.

KIANGSI RAILWAY.—The section of this railway, 16 miles between Kuikiang to Wanyiwan, was opened to traffic July 18.

MANILA-LOS BANOS RAILWAY.—This branch of the Manila Railway Company was opened to traffic on August 6th and now the run brings the residents of the capital within two hours of the famous medicinal springs. The construction of the main line southward through Batangas is progressing favorably.

THE BAGUIO RAILWAY.—Extensive surveys are under way for the purpose of locating a desirable line to connect Baguio with the Manila Railway Northern Trunk line. Several lines are being run from the west coast to the Summer capital and it is not improbable that an electric road will be installed.

EXPORT OF JAPANESE RAILWAY SLEEPERS.—During the last three years Japan has exported to China, Mexico, Hongkong, England, Canada and the United States over yen 13,000,000 worth of railway sleepers, and in 1909 the value was represented by about yen 9,000,000.

THE KOWLOON-CANTON RAILWAY.—It is expected that this line will be opened for traffic next month. Early this month the first locomotive passed over the section between Hunghom and Yaumati and the permanent way was declared complete to the frontier from Kowloon. The *China Mail* states that the purpose of opening the line at this stage has beed deemed advisable in order to work up the light local traffic, and to transport material for the Chinese section if required, all of which will help in earning revenue. For a time, however, the complete rolling stock will not be available. This is because of the delay in the supply from Home of the iron framework for the passenger cars, which was to have been delivered in the early part of the year but which as yet has not arrived in the Colony. The bodies of the cars have been built at the Hongkong and Whampoa Docks and are quite ready for the addition of the necessary iron-work. By reason of this delay it will not be possible for the proper cars to be used at the opening or for some time afterwards. Accordingly, ten four-wheeled covered goods wagons have been converted into temporary passenger coaches, eight being fitted as third class cars and the other two as first class. These will be in use until the other coaches are in readiness. These latter coaches will be of most approved style. They will number eight altogether and will be of what is known as the corridor bogey type, illuminated with electric light, and possessing every convenience. They will be of the following classes:—One First Clas to seat 32 passengers: one First and Second Classs, combined, to seat 24 First Class and 44 Second Class passengers: one Second Class, to seat 82 passengers: three Third Class, to seat 120 passengers each: one Third Class, Luggage and Brake, to seat 34 passengers: one Third class, Mail and Brake, to seat 28 passengers. The total weight on the rails of each coach will be 44 tons The goods wagons will number about 4 and will be of varying carrying capacity, ranging from 30 tons to 15 tons.

Altogether, says the *Mail*, there will be four locomotives used on the section, though the two smaller of these will not be available until the beginning of next year, as they are being used in construction work by Messrs. Leigh and Orange up to that time. The other two are magnificent types of engines, each having a total weight of 89 tons 15 cwt. They are six-wheeled coupled sidetank engines and will prove especially valuable for the peculiarities of the line over which they are to run, enabling the complete run through to be made without the necessity of stopping to take in water.

As to the Kowloon terminus, the present station near the Ferry wharf is purely a temporary one, as also is the one nearing completion at Hunghom. These are thought to be all that is necessary for the time, probably until the opening of the Chinese section. It was, in the early days, intended to have the terminal station on Kowloon Point, but the proposal of Mr. Lindsey, the present Chief Resident Engineer, to have it located at Hunghom has now received the approval of the Secretary of State. So in the course of time more substantial station buildings will be erected at Hunghom, which will serve the native population well and also be equally convenient for those residing on the Hongkong side, for a pier will be constructed adjoining the station and passengers will be conveyed across the harbor.

THE CHINCHOW-AIGUN RAILWAY.—According to Peking dispatches to the *Standard* China is willing to modify the original plans for the construction of this railway so that it will not proceed farther than Taonanfu and thus remove the proposal outside the zone of Russian contention with the understanding, however, that this modification must not be interpreted as a recognition of Russian claims. No official announcement has been made in support of this report as cabled.

F. M. S. RAILWAYS FOR 1909.—The total receipts for the year, according to the annual report, amount to $5,377,409, an increase of $119,510 over the previous year and exceeding the estimate by $157,409. The total amount expended including amount to capital account for railways during the year amounted to $7,469,342.

THE YUNNAN-KWEICHOW RAILWAY.—The Viceroy of Yunnan and the Governor of Kweichow have petitioned the Board of Communications for a foreign loan to construct a line between these two points and urge an early preliminary survey. These officials state in their petition that they do not believe it possible for the merchants of the provinces interested to raise the necessary funds.

INDIAN BRANCH RAILWAYS.—The Indian Government has provided new regulations covering the extension of the railway system and of the approval for guarantee of interest on new branches proposed:

(1) There will in future be no published list of approved projects, but any project may be submitted for approval at any time and will be considered at once upon its merits. (2) The interest which Government is prepared to guarantee upon approved projects is raised from 3 to 3½ per cent. (3) In the case of Company branch lines connecting with State worked lines, the Company will be allowed to annex the profits up to 5 per cent, instead, as heretofore, up to 3½ per cent, before dividing the surplus with Government. (4) In view of these concessions, a proviso is added that the terms for the construction and working of the proposed branch line by the main line administrations must be arranged in advance to the satisfaction of the Government of India. (5) Administration expenses during construction in the case of branch lines worked by the main line administration, may be charged as part of the working expenses to be met out of the percentage taken by the working agency until the 5 per cent is earned to the branch line company, instead of, as heretofore, until 3½ per cent has been earned. (6) A compulsory purchase clause is added, enabling Government to acquire a branch line on one year's notice at any time on the payment of twenty-five times average net earnings (excluding payments on account of guarantee or rebate) during the three preceding years or of 115 per cent of the capital expenditure on the line whichever is the greater. The ordinary purchase clause is also modified to make it that Government cannot acquire under it until thirty years have elapsed instead of as previously twenty years.

RAILWAY SUPPLY SHOPS AT YONGSAN.—Under the direction of the Railway Board of Korea, these shops are now engaged in turning out a large order for freight and passenger cars for the railways to supplement those ordered from the United States. There are now 28 cars including passenger and baggage and mail coaches and 100 freight cars being constructed at this factory, and it is expected they will be turned over to the authorities by the end of the year.

CARRIAGES FOR THE TIENTSIN-PUKOW RAILWAY.—The *China Critic* announces the arrival at Taku of two first class carriages which will be put on the service to Te Chow.

SOUTHERN SECTION TIENTSIN-PUKOW RAILWAY.—According to the correspondent of the Shanghai *Mercury*, 100 miles of this section should be completed by the end of the year. He reports that most of the bridges for 65 miles are completed and track laid for 45 miles. With the completion of a difficult cutting through the Pukow hills there will be 65 miles of continuous track. Two engines and 40 cars are engaged in construction work on the Pukow end. Progress is reported on the permanent bridge crossing the Sha-ho. The *Mercury* also publishes a description of the Pukow Railway shops which, under the direction of Mr. J. Alston, are equipped to keep the rolling stock in condition. At the present time the rolling stock includes ten main line engines consisting of two American locomotives manufactured by Baldwins and eight others manufactured by the North British Locomotive Company, Ltd. There are two ballasting and earthwork locomotives, American Baldwins, and four locomotives bought from Tungshan works for earthworks. There are also 100 highsided wagons, built by Hurst Neilson, Motherwell, and 50 low sided wagons built by the Midland Railway Carriage and Wagon Company, 50 low sided wagons built in Belgium and 50 covered goods wagons built in England. There are also:—100 Mud-Wagons, 80 low sided wagons and 20 flat wagons, built at Tungshan. The machine, fitting, smith and present erecting shops consist of four 42 feet spans 200 feet long. The locomotive store is of three 25 feet spans, 100 feet long. Foundry and Boiler House one span 42 feet by 200 feet long. Carriage shed one span 40 feet by 200 feet long.

The total length of the Southern section of the Tientsin Pukow Railway is 236½ miles. There are 200 bridges and 377 culverts. The length of bridging per mile—Lightest district—61.7 linear feet per mile; Heaviest district—96.3 linear feet per mile. Thus the average throughout is 74 linear feet per mile. Total amount of earth work is 3,430,000 fong, while the total amount of rockwork is 299,800 fong.

JAPANESE PRIVATE RAILWAYS.—The Railway Board reports the filing of applications by the promoters of 50 projects this year including 36 referring to the Kobe-Kyoto district.

MANILA RAILWAY BONDS.—An issue of ₱4,000,000 of government guaranteed bonds by the Manila Railway Company has been authorized by the Philippine government to cover the expenditure of construction of new lines.

OSAKA AND KOBE RAILWAY IMPROVEMENTS.—Plans have been submitted to the Railway Board involving the estimated expenditure of yen 8,000,000 for the rebuilding of the Osaka depot and the construction of an elevated railway through Kobe. Additional funds will be secured by the sale of land.

HONAN-TUNKWAN RAILWAY.—The survey of the first section of this line is reported complete and work has commenced from Loyang.

China, Manchuria, Japan, Indo-China, Siam, Straits Settlements, Malay States, Burma, India, Malaysia, and the Philippines

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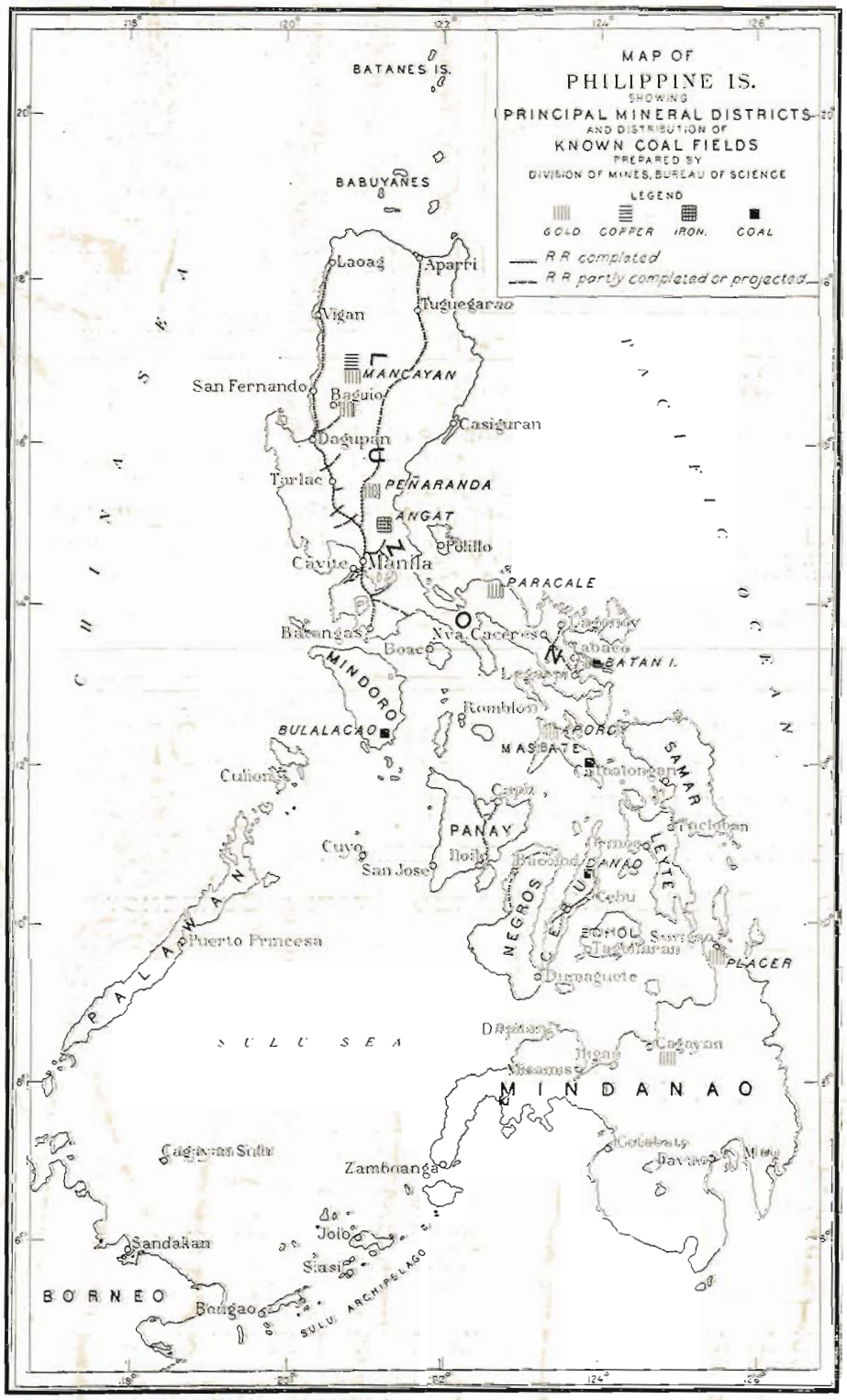

Courtesy Bureau of Science

Philippine Mineral Resources

General News and Comment

Japan in Korea

ENGINEERING COMMERCE FINANCE

THE FAR EASTERN REVIEW

GEO. BRONSON REA, M. E.
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THE ANNEXATION OF KOREA

"To promote the common weal of the two nations and to assure permanent peace in the Extreme East" is the declared motive for the conclusion of the treaty of annexation between the Emperor of Japan and the Emperor of Korea. This is supplemented by an introduction to the official announcement of rules governing Korea's foreign trade and treaty obligations as affected by the transfer of sovereignty, which offers further explanation and follows:

"Notwithstanding the earnest and laborious work of reform in the administration of Korea in which the Governments of Japan and Korea have been engaged for more than four years since the conclusion of the agreement of 1905 the existing system of government in that country has not proved entirely equal to the duty of preserving public order and tranquillity and in addition a spirit of suspicion and misgiving dominates the whole Peninsula In order to maintain peace and stability in Korea, to promote the prosperity and welfare of the Koreans and at the same time to insure the safety and repose of foreign residents it has been made abundantly clear that fundamental changes in the actual regime of government are absolutely essential."

The treaty was concluded August 22 and promulgated August 29.

In another column, we publish a short review of the development that has featured Japanese administrative control initiated by the agreement of 1905, and while there is every indication of a progressive policy on the part of the Japanese with respect to the development of the country's lagging industries, the lack of co-operation on the part of the people and the limited control of the different functions of government were too serious handicaps to make the program of reform effective. With the transfer of sovereignty these limitations are removed and we have no hesitancy in predicting a remarkable era of development under the new regime. The preservation of peace and the insurance of protection to private property were not possible under the former regime without conflict of authority. These are necessary requirements as a basis of any healthy progress along the line of reform and Japan had either to withdraw her influence from Korea and abandon her policy there or annex the country. The Koreans failed to take advantage of the opportunity to co-operate and participate in the program of reform which was their only hope for the preservation of the Korean empire. Their fate is that of "cumberers of the earth."

Little, if any, opposition has been noted in the press to the transfer of sovereignty. It is generally realized that Korea, in its decadent state, was a menace to Japan. It offered temptation for international intrigue. It is now an added safeguard to the integrity of the Japanese Empire.

Japanese writers, in discussing the transfer of sovereignty, direct attention to the similarity of motives that urged the annexation of Hawaii by the United States, when it became apparent to the latter that unless the islands became United States territory, they might form a bone of serious contention and a menace to the western coast if occupied by a foreign power.

These writers also refer to America's altruistic policy in the Philippines and point to the great similarity in methods of reform and development of industries among a backward people, inaugurated in the islands and those in Korea. They claim that Japan's control of Korea will give it the same authority there to carry out its policy as that enjoyed by America in its island possessions, and, while it is the present pronounced policy of the administration at Washington to give the islands independence at some indefinite date, it is the generally accepted belief that the advantages of American sovereignty over the islands will become in time so apparent to the Filipinos that they will refuse to countenance agitation favoring withdrawal. The Japanese, however, are anticipating the future appreciation by Koreans of the benefits of annexation and the definite announcement of the status of Korea as an integral part of the empire makes for greater confidence in the future of that country, a consummation not provided with reference to the Philippines by the indefinite status involved in Washington's policy.

In a word, Japan refused to undertake definite responsibility for the tuition of the Koreans without the authority necessary to enforce the Imperial will in matters of discipline, and to control international relations in a manner to avoid embarrassing situations. And Japanese statesmen presume the conditions that made it necessary to acquire sovereignty would be resumed should hope for independence be held out to that country in the future. The treaty of annexation therefore, very wisely, contains no such sophistry.

THE CHINCHOW-AIGUN RAILWAY

Interest in the proposed construction of this line has received an impetus by the action of the China Association in filing a protest with the British Foreign Office against the sacrifice of the interests of British contractors by the continued attitude of the British government towards the construction of this line in deference to the wishes of Russia and Japan as affecting Mongolia and Manchuria.

The Association claims that this line is purely a Chinese undertaking and does not conflict with the Anglo-Russian Agreement. A copy of this protest was sent to twenty British chambers of commerce with the result that several of these bodies have given it unqualified support. In addition to this Messrs. Pauling & Co., Ltd., the contractors interested, issued a circular to the British trade associations in which they say:

"The objections of Russia and Japan are inconsistent with their treaty obligations, and our government's support of these objections is not founded on any convention, agreement or treaty. It is plainly a case of unnecessarily sacrificing British interests and of shutting the doors of a growing and important market to British trade for good and all."

The Foreign Office, it is reported, does not assume that the simple carrying out of a contract to construct a line in which there would be no British control involved, could be construed as a violation of the strict letter of the agreement, but it holds that it might be considered an infringement of its spirit.

The counter proposal of Russia that the construction, for the present, terminate at Yao-man-fu does not meet with favor.

Those interested in the concession see inconsistency in Russian opposition and the inference is drawn that there is a well defined understanding to which Japan, Russia, Great Britain and France are alleged to have subscribed, designed to prevent China controlling a line of railway to her borders in Manchuria, Mongolia, Tibet or French Indo-China and that the interest of the British government is thus sacrificed respecting Manchuria so that her influence in Tibet may be advanced. Whether this may be relied upon as an explanation of her attitude, the excuse offered by the Foreign Office for failing to support British contractors in Manchuria is taken by many Britishers in the Orient with a grain of salt. Officially, any such motive is denied.

The *Shanghai Times* compliments Mr. Thomas Mallard on his article "America in China" appearing in the *Forum* in disclosing to the world the reasons assigned Japan and Russia for their opposition to the railroad.

Japanese opinion resents the implication that the Tokyo government is, or has been, opposed to the construction of the Chinchow-Aigun line by China, and the *Japan Mail*, reflecting this general attitude, directs attention to the recent assent of the cabinet to the undertaking and says:

"There is one obvious discrepancy between the facts and their statement. The China Association is represented as considering this railway question a conclusive test of the accessibility of Manchuria to British capital in the face of Russian and Japanese opposition. But the truth is, as it seems to us, that the exclusiveness is mainly on the side of the Association so far as Japan is concerned. It is an old

experience that error dies hard, and we do not at present recall any incident which illustrates the aphorism more vividly than does this Aigun-Chinchow Railway. For, the China Association *non obstante*, the country against which a policy of exclusion would appear to be followed is Japan. The Japanese Government has never objected to the building of a railway between Chinchow and Aigun, or to the investment of British capital in such an enterprise. On the contrary, the Tokyo Cabinet assented to the project from the outset, making only one condition, namely, that Japan should share and share alike with other foreign countries in furnishing the capital and contracting for the materials. In fact, Japan simply asks for that equality of opportunity which she is now wrongfully accused of denying to others. It is against Japan, then, that an exclusive policy is to be exercised, whereas the accusation is that Japan seeks to exercise that policy against others in this very case."

The *Times*, however, assumes a pro-Russian tone with respect to the opposition from St. Petersburg, and justifies Russia's attitude. This semi-official expression is no doubt largely due to a desire on the part of Japan to placate the American financiers, counteract the growing British opposition to the alliance and at the same time display a friendly attitude towards her northern neighbor. The *Times* says:

"Coming to Russia, it has to be admitted that she objects to the railway project, but no one would think of caviling at her attitude or denying her rights in this matter. A railway from Chinchow to Aigun would have been the opening of a new gate of access to Russian dominions, and would have had strategical importance of the highest character. Russia is absolutely justified in declining to endorse such a programme, nor can her reluctance be justly construed as in any sense subversive of the principle of Equal Opportunity. Especially has it to be noted that St. Petersburg softens its refusal in the Aigun direction by offering to sanction an alternative line giving direct access to Peking further west. Finally, not Russia alone, but also all impartial onlookers must be puzzled to find in purely commercial and industrial motives an explanation of China's anxiety to build a long and costly railroad in a remote and unfrequented part of her dominions, while neglecting to similarly equip provinces where a crying need for such facilities plainly exists."

Tokyo is accomplishing a difficult diplomatic feat with remarkable success and yet it matters very little to her which way the "cat jumps."

However, the British commercial interests are far from satisfied with the situation generally and while the allegation that there is an understanding among the different powers mentioned, including Great Britain, is denied, the suspicion remains, and it will take more than semi-official interviews to clear the atmosphere.

That the American financiers interested do not consider the Chinchow-Aigun Railway proposal a "closed incident" may be gathered from the following interview with a member of the group, from its New York correspondent, published in the N. C. *Daily News*:

"It is an exaggeration to say that we contemplate withdrawing. Of course, if events show that the railway cannot be built, we shall not continue to press the matter, but the present outlook seems to us to make it certain that the road will be constructed. We believe the work will be well under way within a year, at the most. The position of the British Foreign Office does not interest us at all. British protests or hostility will not hinder us in the slightest degree. Our interests are in the hands of the American State Department, and whatever attitude Sir Edward Grey sees fit to adopt will have no bearing on the position adopted by our Department of State. We mean to have the railway built, and it will be built. The Chinese Government has signed the rescript for the construction of the road, and though it is being held up, this is due only to temporary difficulties. It is causing us no uneasiness whatever. We are quite content to let matters move slowly, knowing they are moving in the right direction. It is impossible to make any public statement of the present trend of the negotiations, for the position is too delicate to admit of undiplomatic discussion, but we have every reason for believing we shall be successful."

The outcome of the controversy over this important line is awaited with great interest. Among the great majority of representatives of British and American interests there appears to be a growing appreciation of the Knox proposal respecting Manchuria. At first it was received with great reserve and through almost every British official and semi-official channel, disparaging comment was encouraged. This attempt to force opinion at the outset was successful, but slowly, yet surely, the practical benefits of the Knox doctrine, its application as a peaceful and desirable solution of vexing questions respecting Manchuria, consistent with the declared policy of the "Open Door" and the guarantee of China's integrity, and the principle of fair play and unselfishness involved, have been more and more appreciated. Indeed, we find a growing sentiment among the leading British commercial bodies deploring the sacrifice of British interests to diplomatic adventure that offers no adequate return. This influence will have to be reckoned with and the Foreign Office may yet be obliged to revise its position materially to quiet the protest of British foreign trade interests.

PHILIPPINE TRADE

The total value of Philippine foreign trade for the year ended June 30, 1910, amounted to 153,897,554 pesos, an increase of 36,219,674 pesos over the previous year. The imports amounted to 74,123,850 pesos compared with 55,588,964 pesos in 1909 and the exports were valued at 79,773,704 pesos compared with 62,088,916 pesos in 1909. The balance of trade in favor of the islands for the year was 5,649,854 pesos, an amount three times that of the previous term. The increase in export included hemp from 79,210 tons to 99,305, sugar from 21,285 to 94,155 tons and cigars from 2,696,000 to 83,931,000.

Of these exports 39,502,842 pesos worth went to the United States as against 20,508,174 pesos the previous year, while the American imports increased in value from 9,387,662 pesos to 21,552,256 pesos or more than double.

The increased trade is largely due to the limited free entry of sugar and tobacco into the United States.

The main feature of the year is the growth of American trade with the islands representing 47% of the exports against 33% the previous year and an increase in imports from 17% in 1909 to 30% in 1910.

PRESIDENT TANG SHOU-CHIEN'S DISMISSAL

The following edict was issued under date of August 23 cashiering President Tang Shou-chien of the Chekiang Railways:

"The Grand Councillors have submitted a telegram from Tang Shou-chien, ex-Commissioner of Education in Kiangsi province and President of the Chekiang Railways, accusing Sheng Hsuan-huai of being the chief culprit and originator of all troubles to the Kiangsu and Chekiang Railways and stating that he should not be allowed to return to his post, also praying that his appointment may be countermanded, or that he may be divested of control of railway matters so as to satisfy the people of the Empire. His words are mostly improper and exceedingly wild and rebellious. The Throne in the appointment of men has its own decision and Tang cannot be allowed to make improper representations at random. He merely seized upon this as a pretext to escape responsibility in railway affairs and to win for himself renown. Thus he has purposely made dangerous statements to excite attention and his cunning motive will not bear inquiry. Tang Shou-chien is hereby cashiered and is not allowed to interfere in railway affairs. This is intended to serve as a warning to those who seek to fish for praise and reputation and are cunning to avoid responsibility."

This action created a sensation and the Board of Directors submitted a petition asking that the decree be withdrawn. President Tang has been active in a campaign for the cancellation of the agreement between the Chekiang Railway Bureau and Peking. His dismissal is interpreted as an indication of the purpose of Peking to centralize control of railway construction in the Emipre.

MATERIALS FOR PAPER

In view of the proposed development of the paper manufacturing industry in Indo-China with a view to utilizing bamboo, as outlined by Hongkong and French capitalists, the report of Mr. Arthur D. Little, the official chemist of the American Paper Pulp Association, recently issued, may be of special interest at this time. Mr. Little has made exhaustive investigations to search out new fibers for this purpose in view of the rapidly disappearing supply of wood product. He places waste flax straw in the lead, then follows cotton seed fiber, cotton and corn stalks, wild American hemp, marsh grass, cogon grass and Manila waste. Among these, he gives bamboo a prominent place as may be gathered from his report as it appears in the *Publishers' Weekly* in part as follows:

"Especially noteworthy in the development of the year is the serious and general revival of interest in bamboo as a source of paper stock. Its superlative value for this purpose was urged, you will remember, by Routledge in 1875 after his introduction of esparto into England. You may also remember that my report of last year refers to the very favorable conclusions as to bamboo reached by R. W. Sindall in his report to the British Government on available sources of supply of paper stock in the British Colonies. These conclusions are now amply confirmed by Raitt, who has recently published the results of numerous experiments of his own on the mill scale in Burmah, Bengal, Malabar and Straits Settlements, and by Richmond in the laboratory of the Bureau of Science at Manila. Raitt finds in bamboo a really inexhaustible raw material. He recommends the establishment of bamboo plantations so arranged that one-third of the whole plantation shall be cut over every year. This will secure absolute permanence of growth, and, in fact, such systematic cropping will increase production. Raitt finds the yields of bamboo to be 11 tons per acre where the growth was poor, 18 tons with moderate growth, and 44 tons per acre with luxurious growth. The best yields of fibre, 44 per cent., and the best results in treatment were secured with three-year old shoots. The internodal pieces alone were digested, the rejected nodes amounting to 8 per cent. of the total weight. The stems were cooked at 60 pounds pressure for ten hours, with 30 pounds of 76 per cent. caustic per hundredweight of dry bamboo. The fibre bleached to good color, with 20 pounds of bleach per hundredweight.

"Raitt further finds that the stems were easily reduced by the sulphite process, giving a yield of 51 per cent. and bleaching to a brilliant white, with 16 pounds to the hundredweight. He estimates that in a 200-ton sulphite plant at Rangoon the cost of bamboo fibre will be $24.30 a ton.

"Richmond, whose excellent work in the Philippines deserves the highest credit, finds that it is quite unnecessary to remove the nodes prior to cooking, provided the stems are first passed through crushing rolls and afterwards, for convenience of packing in the digester, cut to 3 or 4 inch lengths. He obtains from the different varieties of bamboo yields of 40 to 43.7 per cent. of bleached fibre by the soda process. The sulphite process gives 43.5 bleached fibre, which puts bamboo on about the same basis as wood in this regard. The unbleached sulphite was nearly as white as the thoroughly bleached pulp.

"The importance of these figures becomes evident when we consider that we have in bamboo a raw material directly comparable to wood in many respects, but with no bark to remove,

FAR EASTERN RAILWAY NEWS

SOUTH SHANTUNG RAILWAYS.—A correspondent of *Shanghai Mercury* gives a description of the Yihsien coal railway and plans for further extension in South Shantung. Of the Yihsien coal line he says:

"This road is technically known as the Tai-Tsao Railway, because it runs from Tai-er-chwang, the principal port on the Grand Canal in South Shantung, to Tsao-chwang 90 li to the north, the village nearest the chief coal mines of Shantung. Work began on it over two years ago, the main promoter being H. E. Chang, at the time Salt Commissioner of Shantung. The gentleman and others associated with him have extensive interests in the coal mines. The road construction was held up for some months by the refusal of certain wealthy families along the line to sell the right of way to the railway. Trains are now running the entire length of the line, the largest bridge along the route, that west of Yihsien city, having lately been sufficiently advanced to permit the transit of trains.

"A flourishing trade in coal has already sprung up on the railroad. At present the mines are shipping about four hundred tons of coal daily to Tai-er-chwang by rail and they hope to soon increase it to 900 tons daily. They claim the mines are now putting out eight hundred tons of coal a day and they have mountains of it waiting for shipment, the yards at the mines not yet having been adequately prepared for its proper transportation.

"There are second and third class passenger carriages which are doing a fair business. A first class coach is also under construction. For sixty li the charge for this class is twenty coppers (tung-tse) and for second class forty coppers. The second class passengers go in coaches and have free tobacco and tea and are allowed a hundred catties of baggage, while the third class travelers go tealess on a flat car with no locally manufactured cigarettes to solace them by the way. They have sixty catties of baggage free.

"Freight is in four classes: First class ten coppers per hundred catties, second class, nine, third class, eight and fourth class five. The fourth class comprises lumber, etc. Cheaper rates by the ton or car.

"Such is the combination of coal and iron ore in Southern Shantung along the line of the Tsinpu railway that the prospective railway kings are waging a battle as to who shall further tap the resources of Shantung's Pittsburg. Four lines are talked of.

"First, a line from Yihsien or from a point on the Tsin-pu line sixty li west of Yihsien to Kiaochow or some place on Kiaochow Bay. This line would go via Ichoufu city and would be an attempt on the part of China to gain some of the trade commanded by the German Railway running from Tsingtau to the interior.

"Second, a line from the same western terminal but going to Tsingkou, the main sea port of North Kiangsu, instead of to Kiaochow Bay.

"Third, a line from the coal field in a southeasterly direction to the proposed Hsuchoufu-Tsing-Kiangpu-Haichow road.

"Fourth, a line from the main line of the Tsinpu railway to the mines. This would be some thirty li in length. The point now under discussion is as to which company, the Tai-tsao or the Tsin-pu, shall reap the profits of its construction."

LIGHT RAILWAY FOR MALAYA.—The government of the Federated Malay States proposes the construction of a light railway connecting Klang and Kuala Selangor.

THE CANTON-KOWLOON (BRITISH SECTION).—Preparations are under way for the formal opening of this section, October 1. The iron frame work, axles and wheels for the passenger coaches, together with the structural steel for the work shops at Hunghom, arrived the latter part of August. The work of assembling the coaches at the Hongkong & Whampoa Docks is being expedited and in view of the fact that the bodies were completed awaiting the arrival of the materials, the coaches will be ready for the occasion. Sir Henry May and the Hon. W. Chatham, Director of Public Works, and party inspected this section on August 3.

CHINESE RAILWAY PROGRAM.—The Waiwupu is anxious to construct the Yunnan-Szechuan, the Szechuan-Tibet and the Yunnan-Kuangzi railways as soon as possible, and in view of the difficulty of securing local *capacity* for this purpose has recommended the arrangement for a foreign loan. The Ministry of Finance has expressed disapproval of this course and a conference was called the latter part of August to discuss the question. Taotai Lao Knokjui has been selected to survey these lines and submit estimates.

EXCURSIONS ON THE PEKING-KALGAN.—Arrangements have been perfected by the directorate of this line to run daily excursions to Nankou Pass from Peking to give foreigners an opportunity to view the Pataling Summit and the tunnel at this point which is the most famous monument to modern railway engineering effort to the credit of Chinese initiative.

TIENTSIN-PUKOW SUPPLIES.—The tenders received for the large contract to supply the southern section of the Tientsin-Pukow Railway with rails, fishplates, dog spikes, and fishbolts were recently opened, and the contract has been awarded to Jardine, Matheson & Co., who quoted Russian rails manufactured by the De Provine Steel Rail Mills and fastenings made in Belgium at $30.22 per ton for rails; $40.05 for fishplates, $46.57 for dog spikes, and $46.57 for fishbolts. The nearest competitor was Siemssen & Co., a German firm, which quoted Shelton iron (British). The only tender for American material was sent in by the Mitsui Bussan Kaisha, a Japanese firm, and this company quoted Carnegie steel rails at $32.73 per ton. The call for tenders was advertised in November last and called for 7,100 tons 85-pound steel rails, 525 tons fishplates, 155 tons dog spikes, and 44 tons fishbolts.

CHINESE EASTERN INDEMNITY.—The Chinese government has remitted Tls. 160,000 to the Chinese Eastern Railway to cover claim for lumber stolen by the Hunghutze on the Yalu.

THE PYINGYANG-CHINNAMPO.—This railway was completed August 14 according to the *Seoul Press*. It is 34 miles in length and construction was begun September 14, 1909.

TRANSIBERIAN SCHEDULE REDUCED.—Twelve hours between Harbin and Moscow have been saved by the new schedule, effective September 1. The distance is now covered in eight days and two hours.

F. M. S. RAILWAYS.—The aggregate net profits earned by the F. M. S. Railways from the opening of the first line in 1885 to the end of 1909 amounted to $19,641,814, equivalent to 42.63 per cent. of the capital outlay. Last year, the dividend earned was 3.18 per cent. on a capital of $46,066,565, or a net profit for the twelve months of $1,468,180 as compared with 3.49 per cent. in the previous year.

PURCHASING AGENT OF THE TIENTSIN-PUKOW (SOUTHERN SECTION).—Mr. Y. C. Tong has announced his appointment as purchasing agent for this section.

CHANGE OF JAPANESE RAILWAY OFFICIALS.—Mr. K. Fujiti, director of the Railway Board, has been appointed to succeed Mr. S. Uyemura who recently resigned his position as chief of the Kyushu Railway Superintendence Bureau.

ANTUNG-MUKDEN CONSTRUCTION.—It is announced that the 53 miles section between Antung and Chikuanshan will be opened to traffic in November. The locomotives and cars are being assembled at Antung.

MANILA RAILROAD COMPANY.—Offers were invited last month for an issue of £411,516 Manila Railroad Company (Southern Lines) First Mortgage Four Per Cent. Gold Bonds, due May 1, 1939, the equivalent of $2,000,000. The bonds are secured by a first mortgage on the whole of lines and the equipment thereof. Messrs. Speyer Brothers and the Hongkong and Shanghai Banking Corporation offer the bonds for sale at 86, equal to £176 19*s.* per bond of £205 15*s.* 2*d.* The subscription list will be opened simultaneously in New York by Messrs. Speyer and Co., and in Washington by the Bureau of Insular Affairs, United States War Department. The Government of the Philippine Islands guarantees payment of 4 per cent. interest per annum on the face value of the above $2,000,000 bonds. Any payments made by the Government under its guarantee are to be repaid to it only at the maturity of the bonds, and the lien of the Government to secure such repayment is subject to the lien of the mortgage securing the bonds. A letter from Mr. Horace L. Higgins, president of the company, is incorporated in the prospectus, says the *London and China Express*. It states that of the Southern lines approximately 60 miles are open to traffic. "From the operating results so far obtained it is confidently anticipated that the net revenue for 1910, the first complete year of operation, will already be about sufficient to meet the annual interest on the $2,000,000 bonds now offered. The 470 miles constituting the Southern lines will traverse a highly productive agricultural country, reaching all the important towns of Southern Luzon." The bonds appear to be a fair security, and should be attractive at present rates.

AUSTRALIAN TRANSCONTINENTAL LINE.—The engineer in charge of surveys in his preliminary report states that the line would be 1,063 miles long on a 4-foot-8½ inch gage, with the ruling grade of 1 in 80, and with a minimum curve of 20 chains. He estimates that the line would, with the necessary equipment, cost $19,381,680 to build.

INDIAN RAILWAYS.—A comparison of earnings for the year 1909, compared with 1908, follows:

"Gross earnings, $156,866,666, an increase of $22,400,000; net earnings, $68,930,000, an increase of $9,915,333. The percentage earnings on capital invested—mileage earning revenue—was 4.81 as compared with 4.33 in 1908. Passengers carried numbered 329,000,000, and passenger earnings $51,200,000, an increase of 8,000,000 passengers and of $1,066,660 in earnings. The freight moved was nearly 61,000,000 tons, and the freight earnings amounted to $93,733,833, a decrease of 1,500,000 tons, but an increase of $6,000,000.

AUSTRALIAN GOVERNMENT RAILWAYS.—The American Vice-Consul at Sydney offers the following information regarding these lines:

"In 1909 there were 1,580 miles of railway in Australia owned by private companies, of which 943 miles were for general traffic and 637 miles for special purposes. The capital cost of these private railways, with the exception of 283 miles for which statistics were not available, was estimated at $15,091,233. The gross earnings in 1908 amounted to $2,276,608, and the working expenses to $1,320,136; the trains covered 1,389,883 miles, and carried 920,000 passengers and 1,627,000 tons of freight. At the date covered by these figures there were 16,653 miles of government railways open for traffic in the Commonwealth."

KALGAN-SURYAN RAILWAY.—The Chinese authorities have decided to rush the construction of this line and also the Kalgan Urga in view of increased Russian activity on Chinese borders.

MOVEMENT OF JAPANESE RAILWAY OFFICIALS.—Mr. Y. Kinoshita, Traffic Manager, and Mr. J. Aoki, Councillor, the Imperial Government

Railways of Japan, are in St. Petersburg attending the Russo-Japanese Through Traffic Conference. Mr. R. Fukao, the representative of the Osaka Shosen Kaisha at the Conference, joined them at Harbin.

Mr. S. Tanaka, Director S. M. R. Co., has wired from Brussels that the Europe-Far East Through Traffic Conference was opened on the 28th July, Thursday.

AUSTRALIAN RAILWAY SUPPLIES.—The Lorain Steel Company, an American firm, has secured a contract for supplying steel rails and fish plates to the Victoria Government to the value of $500,000 gold. The Worthington Iron Steel Co., a British firm, secured the contract for the supply of $790,000, gold, worth of rails and steel plates from South Australia in competition with Russia and German firms.

THE TOKYO RAILWAY.—The period for the completion of this system under its charter expires this year and news has been received that an extension of five years has been granted. In all, when completed, the system will comprise 237 miles of track, but 123 of which have been constructed.

THE PAKNAM RAILWAY CO., LTD.—This company, which operates a single track line 14 miles in length connecting Paknam with Bangkok, paid a dividend of 9% for the half year ended June 30, 1910, and 10% for the previous term. The paid up capital is 500,000 ticals. It will be remembered that last year this company increased its capital from Ticals 400,000 to Ticals 500,000.

THE PHILIPPINE PANAY-CAPIZ LINE OPENED.—This line connecting Iloilo and Capiz was formally opened last month, the Secretary of War driving the last spike during his Southern Philippine trip. This line represents the largest construction work financed by American capital in the Far East. It will probably take another year to substitute iron and concrete structures for the present temporary wooden bridges. The Philippine Railway Hospital at Iloilo has entered into an agreement with the Philippine government whereby all government employees are admitted for treatment on the same basis as railway employees.

JAPANESE RAILWAY FERRY.—The Railway Board has ordered two steamers of 3,000 tons each for service between Shimonoseki and Fusan in anticipation of increased traffic with the opening of the Antung-Mukden line.

SUPPLY OF INDIAN RAILWAY MATERIAL.—According to *Railways*, Messrs. Ewing and Company, Calcutta, Agents for Messrs. McKerrow and Company, Limited, the proprietors of the Sheffield-Twinbarrow System, have got a further order from the North-Western State Railway for the supply of the underframes and other materials of this pattern for certain bogie rolling-stock required on the Kalka-Simla 2 feet 6 inch gauge mountain line, *viz.*, 2 composite 1st and 2nd class carriages, ten 3rd class carriages, 4 postal vans and 8 covered goods wagons with water tanks. The Consolidated Brake and Engineering Company, Limited, are supplying 500 sets of automatic vacuum brake fittings and riggings for rolling-stock to the East Indian Railway, delivery to be completed in England by May 1910. The Vacuum Brake Company, Limited, London, are supplying the South Indian Railway Company with alarm intercommunication apparatus between passengers and the train staff in carriage stock. Messrs. Brinjes and Goodwin, Limited, have supplied a paint grinding machine to the Burma Railways and the Morgan Crucible Company, Limited, 130 crucibles. Messrs. Alldays and Onions' Pneumatic Engineering Company, Limited, London, have supplied a dozen workshop vices and Messrs. P. and W. Maclellan, Limited, Glasgow, 400 cwts. of copper ingots. Messrs. Horsely and Company, Limited, have supplied 20 feet by 100 feet bridge girder spans. Messrs. Kelvin and James White have supplied a number of voltmeters to the Bengal-Nagpur Railway. The Glasgow Iron and Steel Company, Limited, have in hand a large order from the same Railway for the supply of steel boiler plates and buffer beams. Messrs. Wilford and Company, Limited, are supplying 1,000 laminated bearing springs for rolling-stock and Messrs. Turton Brothers and Matthew, Limited, spiral and volute springs. Messrs. Burn and Company, Howrah, have the order of the North-Western State Railway for the construction in their own workshops at Howrah of four hundred goods wagons. Of these 200 are to be ordinary wagons built to the North-Western Railway specification and the remaining 200 wagons are to be built on Sheffield-Twinbarrow underframes and ironwork. Messrs. Burn and Company have also recently put in hand orders for a large number of girders, municipal requisites, sheds, chimneys, hrebars, etc. The Bombay, Baroda and Central India Railway Company are providing two additional new 3-ton steam travelling broad gauge cranes at their Colaba wharves in Bombay in order to facilitate the handling of the traffic. Messrs. Ransomes and Rapier, Limited, Waterside Ironworks, Ipswich, are supplying hand-accident cranes with engine lifts to the South Indian Railway Company. Messrs. Ewing and Company, Calcutta, agents in India for Messrs. McKerrow and Company, the licencees of Sheffield-Twinbarrow Coal Wagon, supplied one of these wagons *free* to the Bombay, Baroda and Central India Railway for a six months' experiment. The trial having proved satisfactory the Railway Company have now purchased the wagon outright. Messrs. Vickers, Sons and Maxim, Limited, Victoria Street, Westminster, had in hand an order for the supply of Rolling-stock Steel Tyres to the Bengal-Nagpur Railway; also Messrs. Thos. Firth and Sons, Limited, and Messrs. Steel, Peech and Tozer, Limited. Messrs. Jessop and Company, Calcutta, have supplied a 10-ton steam road-roller to the North-Western Railway for road-making in stationyards and at stations. The Lancashire Dynamo and Motor Company, Limited, are supplying a milking booster to the East Indian Railway; Messrs. Greenwood and Batley, Limited, Armsley Road, Leeds, are supplying the same Railway with some electrically driven high lift pumps, which will probably be shipped to Calcutta next June. The foot overbridge at Galsi station on the East Indian Railway for which Messrs. Burn and Company are providing the necessary iron, steel and woodwork, together with two trestles and staircases, main girders, bracings, etc., complete, is 79 feet 6 inches long and the contract includes the erection of the work at site. Messrs. Birkmyre Bros. have obtained an order to supply the East Indian Railway Company with 150 paulins, 25 feet by 14 feet, with eyelets and 16 rope lashings each complete. Messrs. Bengal Timber Trading Company, Limited, have supplied 1,000 cwts. of teak-wood squares to the Rohilkhand and Kumaon Railway. An installation of 50 H. P. motor was being substituted for the existing 10 H. P. motor in Bangalore Railway Workshops, the property of the Mysore Durbar, but worked by the Madras and Southern Mahratta Railway as part of the Mysore State line. The Gourepore (Oil) Company, Limited, have a contract for the supply of 14,000 gallons of boiled linseed oil and 700 gallons of raw linseed oil to the Bengal and North-Western Railway. The Vacuum Oil Company, Limited, Calcutta branch, have an order from the Bengal and North-Western Railway for the supply of 5,500 cwts. of axle oil for rolling stock, 350 cwts. of locomotive cylinder oil and 170 cwts. of dark marine cylinder oil. Standard Oil Company of New York are supplying 40,000 gallons of Snowflake kerosine oil 150 degrees test and 60,000 gallons of Chester kerosine oil, 125 degrees test, to the Bengal and North-Western Railway. Messrs. Balmer, Lawrie and Company, Limited, had an urgent order for the immediate supply of two thousand barrels of Portland cement. Messrs. Turner, Morrison and Company have received an order from the Bombay, Baroda and Central India Railway Company for the supply of 6,000 gallons of boiled linseed oil and 800 gallons of raw linseed oil to the Rajputana-Malwa State Railway. The Metropolitan Amalgamated Railway Carriage and Wagon Company, Limited, Saltley, Birmingham, are supplying the underframes and other iron work for a large quantity of vehicle stock to the Burma Railways Company, namely, 330 covered goods wagons and 150 large cattle wagons.

KAIFENG-HANCHOW RAILWAY.—Peking advices announce the appointment of Chao Wen piao as engineer-in-chief of the Haichow-Chinking section of this proposed line.

SIAMESE RAILWAY CONSTRUCTION.—The *Bangkok Times* announces that laying steel by hand is proceeding from Singora, Trang and Petchaburi on the Southern Line while awaiting the arrival of steel laying machines ordered.

MANCHURIA RAILWAY PROJECTS.—There is some controversy over the construction of the Tetsurei-Kailiang railway proposed by Chinese merchants and recently ordered surveyed by the Viceroy. The merchants of Kaigen have put forth a plan to substitute a line running between Kailiang and Kaigen a distance of 360 miles compared to 340 miles involved in the former line. They claim that the line to Kaigen could be built for Tls. 4,000,000 while the other route would cost Tls. 8,000,000.

CHINESE RAILWAY REVENUE.—The Chief of the Railway Department announces that of the ten railways under his department, including the Peking-Hankow, Peking-Mukden, Chengtung Taiyuan, Tao-Ching, Pienliang-Loyang, Pinghsiang-Hsiangtan, Peking-Kalgan, Shanghai-Nanking, Kowloon-Canton, and the West Mansolea. Only two lines, the Peking-Hankow and the Peking-Mukden realized profits last year.

The result of investigation shows the following losses for different lines: Shanghai-Nanking, $905,000; Chengting Taiyuan, $363,000; Toa-Ching, $60,500; Pienliang-Loyang, $363,000; Peking-Kalgan, $90,750; West Mansolea, $9,075.

The Pingnsiang line realizes a profit, and the receipts for the Peking-Mukden line last year were about $6,655,000, and the Peking-Hankow about $5,808,000. For these two lines, after deducting the expenses and interest, there is a net profit of $5,445,000, which, after making up the above deficiencies, leaves about $3,932,500. This amount will be devoted to the construction of additional railways.

THE ACKLEY RAILWAY BRAKE IN THE EAST.—As a result of the visit of Mr. Griffin S. Ackley to the East the Ackley Brake Company has established agencies in Japan, China, the Philippines, and Australia and the brake has been introduced by substantial orders.

The firm of Messrs. Sale & Frazer, Limited, has undertaken the exclusive agency for Japan, Korea and Manchuria and substantial orders have resulted. The Ackley Brake is now being extensively used in Japan.

The China General Engineering Co. of Shanghai has the exclusive agency for China and the Shanghai tramways are already utilizing the brake with general satisfaction.

The exclusive agency for Australasia has been placed with Messrs. R. E. Cameron & Co. of Sydney, Melbourne, and Wellington. The contract was closed by Mr. Charles M. Terry on the part of R. W. Cameron & Co. as resident partner of the Sydney office. Mr. D. Bryant is general manager of the Melbourne office. The first order from Australia included a consignment of 132.

The famous brake has invaded almost every country in the world. It has been in 23 countries and patents are pending in many others.

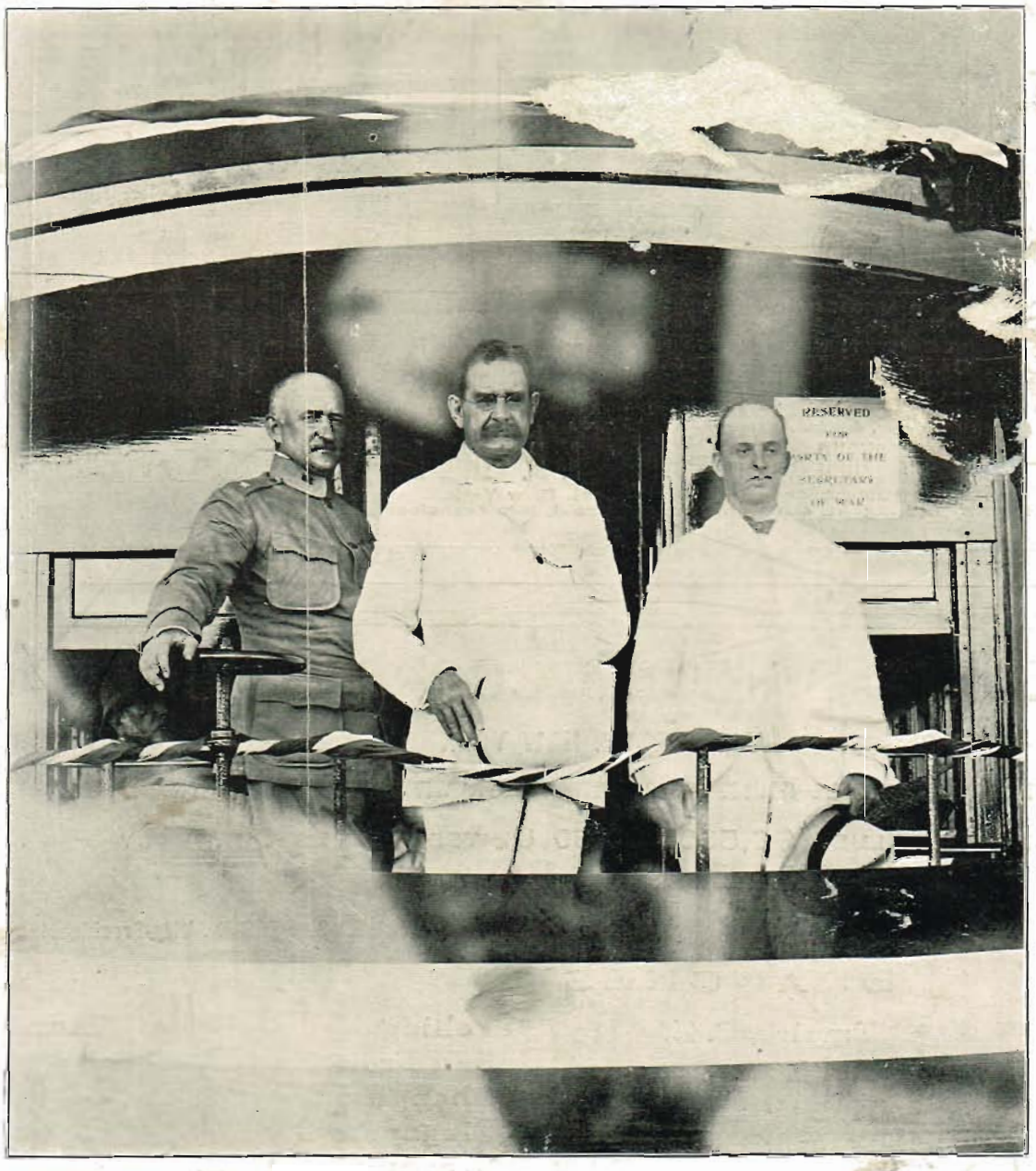
The following from the *Electric Railway Journal* is of interest:

"Griffin S. Ackley, formerly president and general manager of the National Brake Company, Inc., Buffalo, N. Y., retired from the management of that company on Jan. 1, 1910. He has old his entire holdings of stock, constituting a controlling interest, to a syndicate of capitalists Mr. Ackley organized the National Brake Company over six years ago and was its president and general manager until the date of his retirement. Under his able management the company built up a very large business with Peacock & Ackley adjustable brakes throughout the world. The Ackley adjustable brake was put on the market less than a year ago. It is Mr. Ackley's own invention, and has been patented

China, Manchuria, Japan, Indo-China, Siam, Straits Settlements, Malay States, Burma, India, Malaysia, and the Philippines

THE FAR EASTERN REVIEW

VOL. VII.—No. 5. MANILA, SHAN[illegible] YOKOHAMA, OCTOBER, 1910. 50 Centavos Philippine Currency 25 Cents. U. S. C.



Rear View of Special Train on Philippine Railway Co.'s Line at Passi, Panay, Showing Secretary of War Dickinson, General Edwards and Governor General Forbes on Occasion of the Formal Opening of the Line.

Opening of the British Section of the Kowloon-Canton Railway

Canton-Hankow Railway Construction

Philippine Railways for 1910

General News and Comment

Cyaniding in the Philippines

ENGINEERING COMMERCE FINANCE

THE FAR EASTERN REVIEW

COMMERCE ✪ ENGINEERING ✪ FINANCE

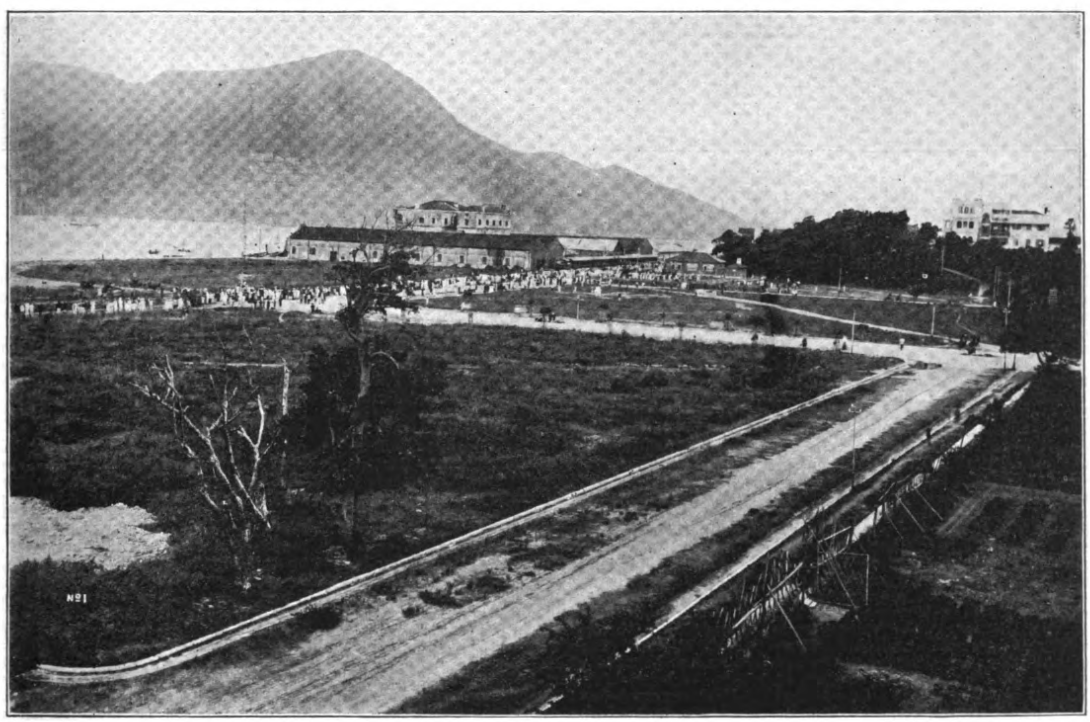
VOL. VII. MANILA, P. I., SHANGHAI, AND YOKOHAMA, OCTOBER, 1910 No. 5.

FORMAL OPENING OF THE BRITISH SECTION OF THE KOWLOON-CANTON RAILWAY

The formal opening of the British Section of the Kowloon-Canton Railway by H. E. Sir Henry May, K. C. M. G., Officer Administrating the Government, took place on the afternoon of October 1, at Kowloon, on a vacant lot in front of the post office in the presence of a large number of officials and citizens of the colony. A guard of Indian troops surrounded the platform and the Mahratta band was in attendance. On the platform accompanying His Excellency were Lady May, H. E. Major General Broadwood, H. E. Wei Han representing the Viceroy of Canton, The Hon. W. Chatham, C. M. G., Director of Public Works, The Hon. Murray Stewart, the Hon. E. Osborne, A. H. Harris, Esq., Commissioner I. C. Customs, Colonel C. W. R. St. John, E. S. Lindsay, Esq., General Manager of the British Section, Kowloon-Canton Railway, The Hon. Wei Wuk, The Hon. J. W. Jameson, C. M. G., H. B. M. Consul General at Canton, and Captain Garnett, A. D. C. to His Excellency.

Manager Director E. S. Lindsay presided and in introducing His Excellency, Sir Henry May, gave a short review of the history of the line which is of special interest and by courtesy of the *Daily Press* we reproduce it as follows:

"Your Excellencies, Ladies and Gentlemen: We are assembled to-day to send forth on its prosperous career the latest offspring of your prolific colony. For the past four years the up-bringing and education of the child has been proceeding in the New Territory, and although during this period the youngster has not been altogether free from infantile troubles, severe chills from typhoons, a little dyspepsia now and then, and other ills that a young and growing railway is heir to, its sound constitution has pulled it through, and with sinews of steel it stands before us a promising youngster full of "go" and ready to start on the journey of life. Even the most prosperous careers have their set backs and it is not to be expected that our young friend will have an exception, but its parents and guardians are not hysterically inclined, and as long as it keeps steadily on its way, and refrains from going off the track—even occasionally—there is no reason to doubt that it will eventually settle down into regular and comfortable practice, and amply repay those who have done so much for it. And as in the life of all union is desirable, we will hope that ere long a suitable one will be forthcoming from across the frontier. There may be some in this assembly who may assert that they travel the fastest who travel alone, but I would remind them that it is equally true that they who travel fast travel light—and that in this case unity means strength in bearing each other's burdens, and the prosperity of the countries which union represents. In the year 1898 the British and Chinese Cor-



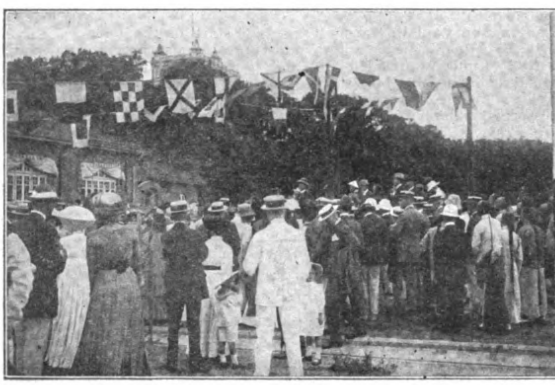
SCENE AT THE KOWLOON TERMINAL OF THE BRITISH SECTION SHOWING FIRST TRAIN ABOUT TO LEAVE

poration obtained a concession for the construction of a railway between Canton and Kowloon. Much delay ensued in negotiating with the Chinese Corporation for the construction of the Chinese Section and it was not till 1905 that circumstances justified the commencement of the construction of the British Section. After protracted negotiations the agreement for the Chinese Section was signed by the British and Chinese Corporation on the 7th March, 1907, and shortly after the construction of that Section also was commenced. A good deal has been said off and on about the cost of the railway—railways like this one which are intended for the development of a district usually do cost a good deal, and until that development is accomplished, the traffic must necessarily be slight. The original intention is liable to be lost sight of, when, after a railway is finished, traffic sufficient to pay for the interest on its cost is not immediately forthcoming. In order to give you some sort of idea as to whether the cost has been excessive or not it will be well to have a brief and general description of what the enterprise really comprises. The length of the railway is 22 miles between the Buffer Stop at Kowloon and the Bridge over the River at Lowu River at Lowu. At this end there is a Reclamation 41 acres in area extending between the Deep Sea Frontage known as Blackhead's the purchase of which is also included in the capital cost of the Railway and the new Gascoigne Road at Hung Hom. Along the frontage of this there will be room for three Deep Sea Berths where ships can come alongside jetties. The Railway has had to provide for extensions of Public Works which the growing nature of Kowloon and Hung Hom and Yaumati demands. For 16 miles the railway runs through deep cuttings and on high banks where no other route was practically possible and above all 1¾ miles of the alignment is in tunnel, an abnormally high proportion. In addition to this the capital account has had to bear interest during construction, home charges and loss of exchange which together amount to close on $800,000. The cost of tunnelling has been very moderate and of this there can be no sort of question. The cost of the reclamation works out to about 50 cents a square foot and compares well with the prices we have had to pay for land adjacent. The rates for earthwork and concrete are distinctly reasonable and the rolling stock has been supplied at a low tender. Taking then the cost of the enterprise when it is finished at $12,000,000, let us first deduct therefrom the cost of that portion of the reclamation which does not form part of the Railway proper about $600,000 (I am speaking in general terms). The cost of the deep sea berth at Blackhead's also about $600,000. The cost of the tunnels $3,700 000. The proportion of interest and home charges due to the above $550,000 and with about $50,000 for a few other items, we get a sum of about $5,500,000 to be subtracted from $12,000,000 which gives $6,500,000 as the cost of 20½ miles of untunelled railway inclusive of workshops and equipment. Now if you were to add another $1,000,000 to this amount you could convert the Kowloon-Canton Railway into a doubled line along these 20½ miles and the cost thereof would work out to about $370,000 per mile as a doubled line of Railway of a very heavy nature. If however you prefer to judge it as a single line and to make due allowance on the $6,500,000 say 25 per cent. because all the cuttings and most of the banks and nearly all the bridges have been built for a double line you will get the cost of the single line of railway at $4,525,000, or $240,268 per mile and I leave it to the *cognocenti* to judge whether this figure compares favourably with the cost of similar work elsewhere. For my part I am sure it does. Too much of your time has I fear been taken up and I will therefore refrain from worrying you with any more figures of traffic possibilities. (Applause.)

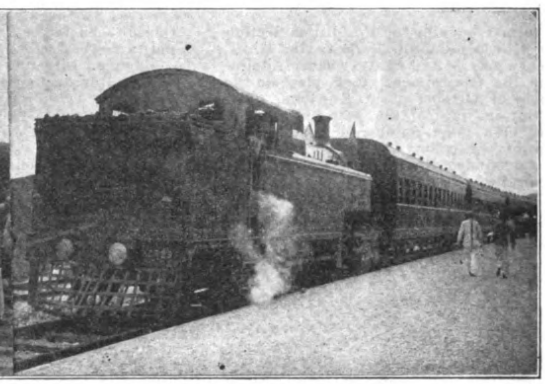
"So I will now ask His Excellency to declare the British Section of the Kowloon-Canton Railway open for general traffic." (Applause)

His Excellency, Sir Henry May, said:

"Your Excellencies, Ladies and Gentlemen, Mr. Lindsey has briefly sketched the history of the railway which I am asked to open to-day. I endorse his hope that the day is not far off when the British and Chinese Sections of this railway will be linked together and the line thrown open to the public for through traffic between Kowloon and Canton. Then will be the time to dwell on the benefits which this line will bring to us by linking our Colony to the neighbouring province of Kuangtung and by forming a part of the gigantic railroad which we hope will soon extend without a break from Kowloon to Calais. But, as to-day we celebrate the opening to public traffic of the British Section only, I propose to confine myself entirely to a brief consideration of the advantages which, I confidently expect, will result from the construction of the 22 miles of railroad now completed. This railway will serve to introduce many of you to district beyond the Kowloon range of hills. That district has only been under British rule for a little over 11 years. Its development on the broad and easy lines traced by that wise and farseeing administrator, Sir Henry Blake, assisted by Mr. (now Sir) James Stewart-Lockhart, who seems to have a genius for organising economical administration, has been somewhat striking. It was necessary in the first place to incur somewhat heavy expenditure on police protection in order to make the *Fax Britannica* respected. This Sir Henry Blake rightly regarded as our first duty. Next it was necessary to survey the country and to investigate title to land, settle them and draw up an accurate rent roll. In this work Mr. C. McI. Messer and Mr. C. Clementi rendered invaluable service. To the erudite knowledge of the latter of the Chinese law of land tenure the Colony owes the fact that fraudulent claims to large and valuable areas of foreshore extending from Lyeemun to Kowloon City and from Shamshuipo to Laichikok were disposed of in the Courts, the land being rescued for the Colony to the great benefit of the taxpayers. The number of holdings demarcated and adjudicated upon in the mainland district was 281,352. Simultaneously the work of administration had to be organised. It has been carried on in an economical manner by two officers at Tai Po, the Magistrate (now called District Officer) and the Assistant District Officer. In the former capacity the district has been fortunate in enjoying the services of Mr. W. R. Hallifax, who has displayed great tact without loss of the necessary firmness in handling the population. The latter post has of recent years been ably filled by Mr. S. B. C. Ross. The principal source of expenditure has been, and still is, the maintenance of an adequate police force. Much of the success that has been achieved by the administration is due to the efficiency and tact of the police, whose presence the inhabitants now thoroughly understand and appreciate. In the suppression of robberies by gangs of armed men belonging partly to the district and partly to the contiguous Chinese Territory, the police have benefited by the friendly and effective co-operation of the Chinese officials across the border. The revenue collected last year in the mainland district you are about to visit from Land Tax, or Crown Rent as we call it, was $81,000, and from all sources, including opium and liquor, $158,000. This much more than covers the cost of administration and leaves a surplus for the development of the country. But if the development of the district has been satisfactory up to the present time, I venture to predict that it will be much more rapid and much more pronounced now that it has been made easy of access by means of this railway. The administration will be greatly facilitated, trade will be stimulated and the condition of the inhabitants must be improved by their being brought into close connection with the large market which Hongkong affords. We do not expect that this line by



H. E. SIR HENRY MAY MAKING ADDRESS ON OCCASION OF OPENING OF BRITISH SECTION



PASSENGER TRAIN. CARS CONSTRUCTED AT THE HONGKONG AND WHAMPOA DOCK CO.'S SHOPS

itself will pay remunerative interest on the large capital spent on its construction. But the indirect beneficial results to the Colony will, I think, be such as to recompense it in some measure for the large expenditure that has been incurred. All of us, Europeans and Chinese alike, have a feeling how an historic Kowloon tiger would feel if he were caged. We want more elbow room. We need more frequent change of environment. This railway will enable some of us to take short holidays from our work—and from each other. (Laughter.) Others again will prefer to lead the simple life in the country, visiting Hongkong daily for their business. I expect, therefore, to see in course of time a great revolution in the social condition of the Colony. The country to which this railway will introduce you is very beautiful. In the russet garb it assumes in winter, it will remind some of you of your far distant Highlands; the emerald mantle that it dons in summer rivals the emerald dress of comely Erin; the resounding ocean which washes its shores stirs the memories and the hearts of Englishmen. There you may taste of one of the sweetest joys in life—the enjoyment of Nature's beauty. And there too our Chinese citizens may change the restrictions which life in a large city is always subject to for the comparative freedom of a home in the country. This railway will in short bring to the inhabitants of the district, if it does not bring greater riches, it will bring what is better than gold and silver—more enjoyment of life and greater contentment of spirit. To these advantages will succeed a better understanding of the inhabitants of the district now opened to you, and in course of time closer intercourse and more intimate relations with the officials and people of the great Empire on your borders. The work that is this day consummated is an important step in the material improvement of the Colony which Providence has entrusted to our keeping. Let us not in this hour forget the men who have contributed to the work—Sir Matthew Nathan, whose foresight materially assisted in the provision of funds to defray its cost and who initiated the work; Sir Frederick Lugard, under whose able control the work has been carried out; Mr. G. W. Eves, Mr. E. S. Lindsey, and their staff of engineers, who have completed a work which is a credit to British engineering. May this undertaking, under the guidance of Almighty Providence, bring to our dearly loved Colony increased prosperity and happiness. With this prayer on my lips I declare the British Section of the Canton Kowloon Railway open for traffic." (Applause.)

VIEW OF LOWU STATION AT THE BOUNDARY LINE BETWEEN BRITISHAND CHINESE TERRITORY AND TERMINAL OF BRITISH SECTION

The British Section of the Kowloon-Canton line connects Hongkong with the Chinese boundary covering a distance of 22 miles while from the boundary to Canton is 89 miles. The concession for the construction of the Kowloon-Canton Railway was granted the British Chinese Corporation in 1898 but no progress was made for years by the concessionaires. In 1905 the American-China Development Company retired from active interest in the construction of the Canton-Hankow Railway and the plans for an extensive terminal at Canton was abandoned. In redeeming the concession, the Chinese were obliged to secure outside assistance and the commercial interests of Hongkong realizing that this was the opportunity to strike a bargain for traffic connection advanced the sum of £350,000. The survey of the British section was at once undertaken and by the end of 1905 two and one-half miles of embankment and a survey for final location were completed and the title of the land for the right of way resumed by the Crown. The first rough estimate of cost for this line was submitted by Mr. Bruce and amounted to $5,053,274 and did not include the provision for workshops buildings, rolling stock, etc. In June, 1907, the Chief Resident Engineer submitted a more carefully prepared estimate which footed up $8,003,642, but did not include provision for rolling stock or workshops, etc. In December of the same year an amended estimate amounting to $9,860,283.83 was submitted that included the cost of rolling stock and of the resumption of the deep sea wharf near Blackhead Point but did not provide for workshops or for terminal site. In May, 1909, another revised estimate was submitted which amounted to $11,004,128 which covered all items with the exception of sufficient funds to cover all of the resumption charges.

The last estimates submitted in 1910 included all items to cover the completion of the road and amounted to $12,371,495.46,[1] the excess of $1,367,367.46 over the 1909 estimate included one large item of $913,922.67 covering interest and loss of exchange not previously referred to. The balance of the increase in cost is found in the following items:

Estimates for earthwork, $319,403.95; tunnels, $311,320.50; roads, $35,220 16; major bridges, $138,729.05; minor bridges, $10,522.19; culverts, $10,522.19; boundary fencing, $7,302.23; telegraphy, $3,060.75; home charges, $50,000 amounting in all to $875,558.83.

Savings on buildings, $139,998.47 and construction of plant, $132,115.57 with anticipated sales for the year of $150,000 in all $420,114.04, reduced the total increase to $453,444.79.

It might be said that the difference in the several estimates has been subject for much discussion and not a little criticism from those not conversant with the conditions under which the first and second estimates were made. The difference between Mr. Bruce's estimate of $5,053,274 and the last estimate of $12,371,-495.46 amounting to $7,318,221.46, however, has been well accounted for and the expenditure will no doubt be fully justified when the benefits of the line are realized. As explained previously the 1905 estimate was in the rough and made no provision for rollingstock, workshops, etc. Indeed, the first real estimate based on the initial work was that of the Resident Engineer in June, 1907, which amounted to $8,003,642.63.

KOWLOON-CANTON RAILWAY

(BRITISH SECTION)

Main Head.	Sub-Head.	Estimate of June, 1907.	Revised Estimate of 1909.	Further Revised Estimate of 1910.	Variations between Estimates 1909 & 1910.	Expenditure to 31st Dec., 1909.	Anticipated Expenditure to the end of Construction.	Grand Total.
I.—Survey		$45,000.00	$42,277.65	$42,277.65	.....	$42,277.65	.....	$42,277.65
II.—Land		139,700.00	1,195,879.20	1,195,879.20	.....	762,863.55	$433,015.65	1,195,879.20
III.—Formation	(a) Earthwork	2,490,504.70	2,268,176.05	2,587,580.00	$319,403.95	2,047,323.04	540,256.96	2,587,580.00
	(b) Tunnels	2,203,415.00	3,499,824.69	3,811,145.19	311,320.50	3,480,248.19	330,897.00	3,811,145.19
	(c) Roads	82,500.00	84,979.84	120,200.00	35,220.16	4,957.63	115,242.37	120,200.00
IV.—Bridges	(a) Major	585,911.57	677,766.36	816,495.41	138,729.05	648,816.92	167,678.49	816,495.41
	(b) Minor	422,718.11	339,664.28	350,186.47	10,522.19	321,793.12	28,333.35	350,126.47
	(c) Culverts	68,882.00	65,243.86	72,546.09	7,302.23	68,721.56	3,824.53	72,546.09
V.—Fencing	(a) Boundaries	31,813.00	39,999.45	39,999.45	.....	999.45	39,003.00	39,999.45
	(b) Signs	396.00	400.00	400.00	.....	.....	400.00	400.00
VI.—Telegraph	(a) Ballast	26,864.00	26,971.42	30,032.17	3,060.75	19,807.47	10,224.70	30,032.17
VII.—Track	(b) Permanent Way	154,110.00	132,066.54	132,066.54	.....	40,093.10	91,973.44	132,066.54
		747,932.00	732,192.71	732,192.71	.....	524,985.83	207,206.88	732,192.71
VIII.—Stations & Buildings	(a) Buildings	223,396.25	449,998.47	310,000.00	139,998.47	58,647.01	251,352.99	310,000.00
	(b) Machinery	39,560.00	40,000.00	40,000.00	.....	.....	40,000.00	40,000.00
	(c) Furniture	3,410.00	5,000.00	5,000.00	.....	.....	5,000.00	5,000.00
	(d) Workshops	.....	60,000.00	60,000.00	.....	.....	60,000.00	60,000.00
IX.—Plant	(a) Constructions	234,067.00	234,000.10	101,884.53	132,115.57	505,048.23	403,163.70	101,884.53
	(b) Loco., Tools and Plant	.....	50,000.00	50,000.00	.....	.....	50,000.00	50,000.00
	(c) C. & W. Plant	.....	10,000.00	10,000.00	.....	.....	10,000.00	10,000.00
	(d) Engineering	.....	.....	.....	.....	.....	.....	.....
	(e) Loco., Rolling Stock	.....	88,000.00	88,000.00	.....	.....	88,000.00	88,000.00
	(f) C. & W. Rolling Stock	.....	309,540.00	309,540.00	.....	2,350.00	307,190.00	309,540.00
X.—General Charges	(1) Salaries	388,148.20	399,720.43	399,720.43	.....	337,605.63	62,114.80	399,720.43
	(2) Quarters & Offices	38,970.80	68,495.13	68,495.13	.....	67,691.76	803.37	68,495.13
	(3) Furniture	10,956.00	11,639.61	11,639.61	.....	10,981.03	658.58	11,639.61
	(4) Office Expenses	13,068.00	32,710.93	32,710.93	.....	27,893.26	4,817.67	32,710.93
	(5) Medical	20,020.00	22,319.46	22,319.46	.....	20,484.70	1,834.76	22,319.46
	(6) Home Charges	123,200.00	74,478.29	124,478.29	50,000.00	89,633.22	34,845.07	124,478.29
	(7) Interest	.....	.....	713,922.67	713,922.67	251,625.09	462,297.58	713,922.67
	(8) Exchange	.....	.....	200,000.00	200,000.00	63,229.01	136,770.99	200,000.00
Anticipated Credit	(a) Accounts	.....	42,843.53	42,843.53	.....	29,128.27	13,715.26	42,843.53
	(b) Stores	.....	.....	.....	.....	190,297.50	190,297.50	.....
	(c) By Sales	.....	.....	150,000.00	150,000.00	.....	150,000.00	150,000.00
		$ 8,003,642.63	$11,004,128.00	$12,371,495.46	$ 1,367,367.46	$ 9,617,499.22	$ 2,753,996.24	$12,371,495.46

necessary to import labor from India and, later, Chinese returned from South Africa were secured. Italian contractors undertook parts of this work. Compressed air plants were installed for pumping and drilling and special railways were laid to carry off the dirt and rock to the embankments and fills.

The items making another large increase in the 1910 estimate compared with June, 1910, have reference to shops, rolling stock, etc., interest and exchange, etc., and amounting to ₱1,474,306.20, were not included in any former estimate.

The cost of acquiring the necessary land exceeded the June, 1907, estimate by $1,056,179.20, but this was largely due to the vagueness of the original plans for land resumption. No provision was made for terminal site at that time.

The other important items where increases were necessary are: Earthwork, $187,075.30; bridges and culverts, $161,656.29; buildings, machinery, etc., $88,633.75; general charges, $65,000.85, and roads, $37,700.

The principal saving included $132,182.47 on constructions and $36,882.75 on ballast and permanent way. The following comparative table issued March 7, 1910, is of special interest at this time:

The difference between that and the last revised 1910 estimate of $12,371,495.46 amounted in all to $4,367,852.83. The increase over the June, 1907, estimate for tunneling alone amounted to $1,607,730.19.

Some idea of the magnitude of this work may be gathered from the following figures:

Tunnel No. 1.—150 feet in length cost $507.42 per foot, in all $76,113.16.

Tunnel No. 2, *Beacon Hill*.—7,212 feet in length, at $455.28 per foot, in all $3,283,503 99.

Tunnel No. 3.—329 feet in length at $247.48 per foot, in all $81,420.87.

Tunnel No. 4.—170 feet in length, $400.92 a foot, in all $68,156.23.

Tunnel No. 5.—923 feet, $327.14 a foot, in all $301,950.94.

TYPICAL STATION ON BRITISH SECTION KOWLOON-CANTON RAILWAY

TYPICAL BRIDGE CONSTRUCTION ON THIS LINE

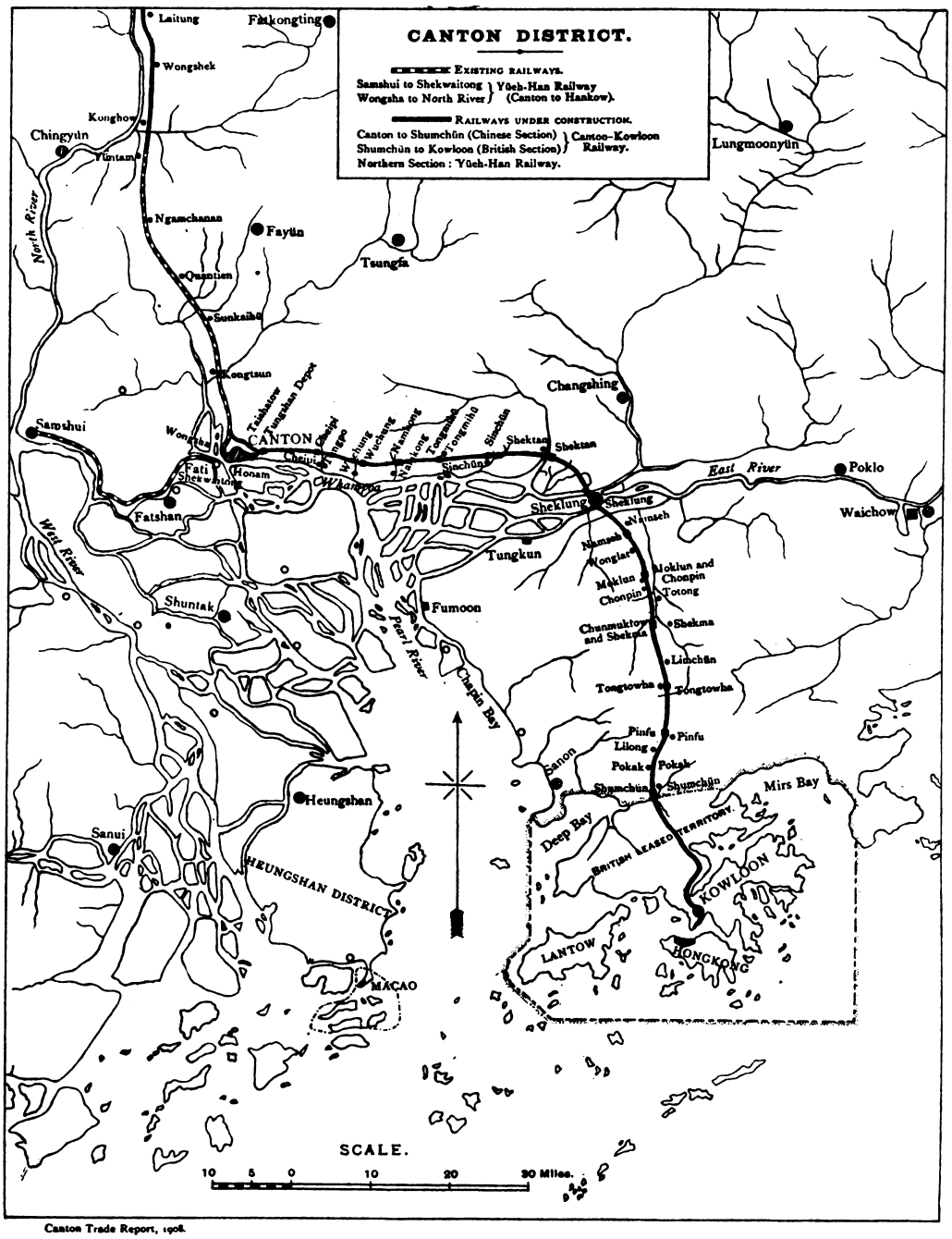
All these tunnels were driven wide enough to accommodate double track with the exception of the Beacon Hill. Two of them were driven through solid rock and the balance through disintegrated granite and solid rock alternating. The arches of these tunnels are all 35 feet.

In the tunnel work great difficulty was met in securing labor, and the formation was of such a character that the engineers were often confronted with new and embarrassing conditions that could not be anticipated. It became

The new rolling stock recently arrived in the colony included two tank engines, six open bogie cars, six covered bogie cars, twenty-six covered four-wheeled cars, ten open four-wheeled cars, and two four-wheeled freight brake-vans. The Hongkong & Whampoa Dock Co., Limited, secured the contract for the erection of the passenger cars and the work was delayed somewhat by the tardy arrival of the steel frame work.

The Hongkong Government considered the advisability of abandoning the railway workshops and placing the work with the large local engineering shops, before the 1910 estimates were adopted, and decided that it would be more economical for the railway to have its own shops. This question was reopened and made the subject of some discussion at a recent meeting of the legislature. Mr. Hewitt, representing the unofficial members, in the course of a speech criticizing the increase in certain estimates with special reference to the railways, said:

"There is only one more matter to which I will refer, the Kowloon Railway. Here again is a question concerning which we would like to have had further information. Again an estimate of eight millions has swelled up 50 per cent., the actual expenditure to date being nearly twelve million dollars. We would ask to be informed how and from whom the material was purchased; if in the open market and at cheapest prices compatible with good material? Has any delay in opening the line been caused by delay in the arrival of the rolling stock; and if so, will the loss thus incurred be made good by those responsible? Touching the workshops, which have not yet been set up, it seems on further consideration a moot point whether a railway of only some 22 miles is justified in incurring the heavy capital expenditure and

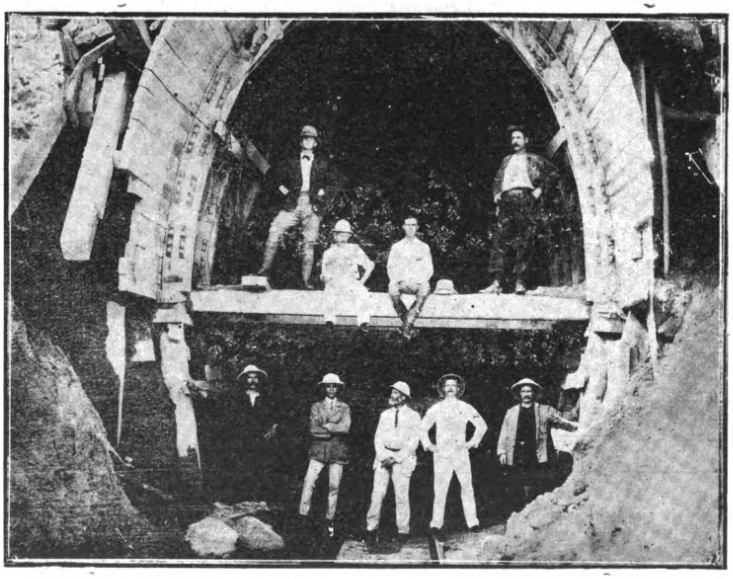


Canton Trade Report, 1908.

the heavy annual cost of running its own workshops. The greater part of the year the staff and machinery must be idle or very indifferently employed. We have two thorough, well appointed dockyards, in addition to the Naval Yard, each fitted with up-to-date machinery and a highly qualified staff. Why should not the Government effect the great saving which must result by abandoning the proposal of having their own workshops, and give these two institutions an opportunity of sharing work which they would no doubt be very glad to secure, and could efficiently perform? If the machinery has already been contracted for this could no doubt be disposed of elsewhere, particularly in view of the great expansions of railway enterprise now being carried out in the Far East. Further information as to the site of the Kowloon Station would also be of great interest. Sir Matthew Nathan proposed to make the station on the eastern side of the peninsula, and for that purpose spent a considerable sum in resuming the site. Later, we understand, it was considered best by the Government advisers to place the station around the corner on the southern side, and for this purpose another large sum of money was spent in acquiring the necessary land. Now, however, it seems the station is to be on the site originally selected by Sir Matthew Nathan, thus fully justifying his decision. It appears to us that the ratepayers are entitled to know how much was paid for these various sites; to what use the Government intend putting the new abandoned site of the station and whether there is reasonable ground for believing that a proper return on the money thus invested can be secured."

Reproduced from the FAR EASTERN REVIEW.

KOWLOON-CANTON RAILWAY, BRITISH SECTION, THE ENGINEERING STAFF

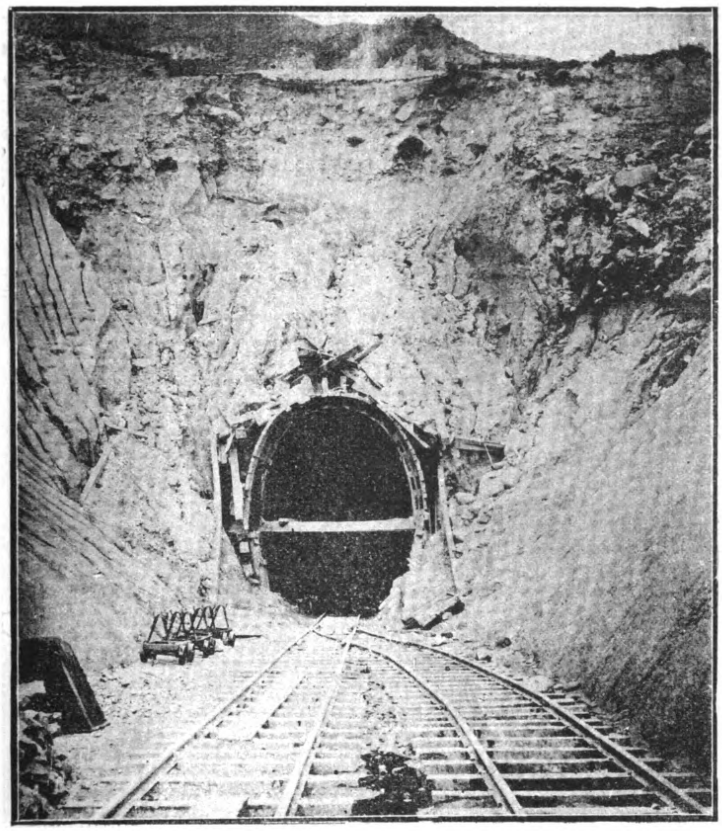


KOWLOON-CANTON RAILWAY, BRITISH SECTION, ENGINEERING STAFF AT TUNNEL HEAD

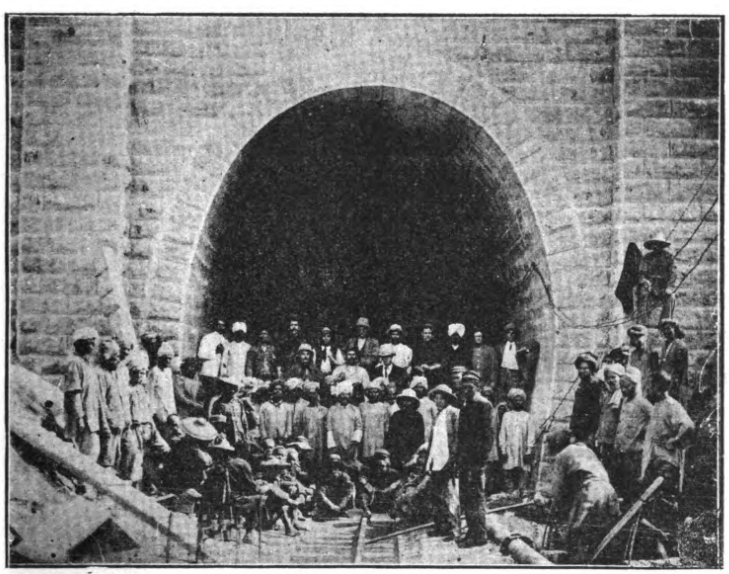
In reply His Excellency said.

"The hon. member made some reference to the railway estimates. I would remind him that in the estimates before us there is no estimate for railway construction. A vote was taken by resolution of this Council early in the year for the expenditure necessary in the current year, and a vote will be taken early next year for the remaining expenditure required to completion. These estimates are only concerned with the open line and stock I may perhaps mention, with reference to his suggestion that workshops were not necessary to the railway, that the Government did not overlook the possibility of dispensing with workshops and getting their work done in some of the engineering yards of the Colony, but after mature consideration they decided that it would be more economical to have their own workshops The hon. member referred to the change in the site of the terminal station. His information on the subject is not quite correct. The site chosen by Sir Matthew Nathan is not the site that has been now fixed upon. Sir Matthew Nathan acquired the land known as Blackhead's Point for the double purpose of forming a railway station and deep sea wharf. There had been a considerable difference of opinion as to where the terminal station should be placed. As I have said, Sir Matthew Nathan wanted to place it at Blackhead's Point. Then it was decided to place it at Tsim Cha Tsoi, and land was acquired for that purpose. Then on further consideration it was decided that to save using that land for railway purposes it would be more economical to revert to a site which was suggested before Sir Matthew Nathan decided on Blackhead's Point, and that is somewhere in the neighbourhood of Gascoyne Road. It is the intention to place the terminal station there, and for the present at any rate to have a flag station at Tsim Cha Tsoi. The result will be that the land which has been acquired at considerable cost at Tsim Cha Tsoi will be available for the Government to dispose of otherwise. I do not think, gentlemen, that there is any point I have left uncovered, but if there is any further information hon. members require they will have every opportunity of obtaining it in Finance Committee."

Provision for a ferry service between the city of Victoria and the railway pier at Kowloon is given attention in a recent issue of the Government Gazette in the form of an advertisement for tenders with respect to the lease of a site and the construction of a pier opposite Ice House Street. This pier is to have minimum dimensions



KOWLOON-CANTON RAILWAY, BRITISH SECTION, ENTRANCE TO BEACON HILL TUNNEL.



[Reproduced from F. E. REVIEW.

KOWLOON-CANTON RAILWAY, BRITISH SECTION, FINISHED ENTRANCE TO BEACON HILL TUNNEL

of 150 feet by 50 feet to be built within twelve months, and to maintain the present pier during the construction of the new one.

Upon the completion of the line to Canton and of the railway pier at Kowloon a ferry service is to be maintained that will conform to the time table inaugurated, carrying passengers and mails under proper bonds to insure the satisfactory performance of the terms of the contract. The concessionaire will have the sole right to the railway ferry service from any or all of the three points in Victoria, viz: The pier opposite Ice House Street, a pier in the Central or Western District, and a pier in the Eastern District, or may combine the service from the Ice House Street and Central or Western pier instead of a direct service from each pier to the Kowloon railway pier.

Three properly equipped steamers will be the maximum number required for each service. The capacity of these steamers for the pier opposite Ice House Street and the Western or Central pier must have a minimum carrying capacity of 300 passengers and for the Eastern pier a capacity of 150 passengers.

The fares are fixed at adult first class, 15 cents, half fare 5 cents; second class, 3 cents; third class, 2 cents, day service, and 3 cents, night service.

The inauguration of the service will not be required until such time the government is satisfied that the revenue will cover expenses, etc.

It is expected that the Chinese section will be opened to Canton by August next year. Work has been progressing more favorably during the last year and approximately 40 miles from Canton are now open.

With the opening of the British section the construction on the Sanchun end will be expedited by the increased transportation facilities afforded for the forwarding of material. Work trains may proceed from Sanchun as the line is built from that end. The work on the terminal station at Tai Sha Tan has progressed satisfactorily and other building construction is well up to the general progress made.

The large number of bridges in the central division between a point 29 miles from Sanchu and the end of the line open from Canton has involved great expense and much time. Between the bridges, however, construction work is well up and their completion at an early date will bring the open line from Canton to the 50 miles point. By that time it is expected that the 29 miles from the British boundary will have been completed and there is prospect that the time set for the opening, next year, may be anticipated by a couple of months.

The time table put in force, October 1, on the British Section provides trains each way on week days only; one down train on Saturdays and Sundays and a down train running Mondays, Tuesdays and Wednesdays, while in addition to the two up trains, there is one that covers the line every day. This arrangement makes in all seven trains initiated the first week o this month. The time table published in the Government Gazette follows:

DOWN TRAINS.

No. of Train.	1 a.m.	3 a.m.	5 p.m.	7 p.m.
Kowloon, Departure	....	8:30	2:30	4:00
Hung Hom, Arrival	....	8:33	2:32	4:03
Hung Hom, Departure	5:25	8:38	2:35	4:08
Yaumati, Arrival	5:31	8:44	2:39	4:14
Yaumati, Departure	5:35	8:49	2:40	4:19
Shatin, Arrival	5:47	9:01	2:52	4:31
Shatin, Departure	5:48	9:06	2:53	4:36
Taipo, Arrival	6:00	9:18	3:05	4:48
Taipo, Departure	6:05	9:30	3:07	4:58
Fan Ling, Arrival	6:15	9:42	3:19	5:10
Fan Ling, Departure	6:20	9:47	3:20	5:15
Lowu, Arrival	6:30	9:58	3:35	5:24

No. 1 Train runs on Week days only.
No. 3. Train runs on Week days only.
No. 5 Train runs on Saturdays and Sundays only.
No. 7 Train runs on Mondays, Tuesdays, and Fridays, but will not run on Saturdays and Sundays.

UP TRAINS.

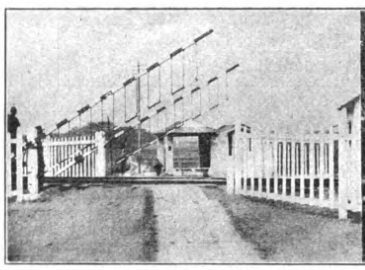
No. of Train	2 a.m.	4 a.m.	6 p m
Lowu, Departure	6:40	11:00	5 35
Fan Ling, Arrival	6:49	11:09	5'45
Fan Ling, Departure	6:54	11:14	5 46
Taipo, Arrival	7:06	11:26	5'58
Taipo, Departure	7:16	11:36	6:08
Shatn, Arrival	7:28	11:48	6:02
Shatin, Departure	7:33	11:53	6:23
Yaumati, Arrival	7:45	12:05	6:35
Yaumati, Departure	7:50	12:10	6 39
Hung Hom, Arrival	7:55	12:15	6:44
Hung Hom Departure	8:00	12:20	6:45
Kowloon, Arrival	8:03	12:23	6:47

Nos. 2 and 4 trains run on week days only
No. 6 train runs on week days and Sundays

THE CANTON-HANKOW RAILWAY

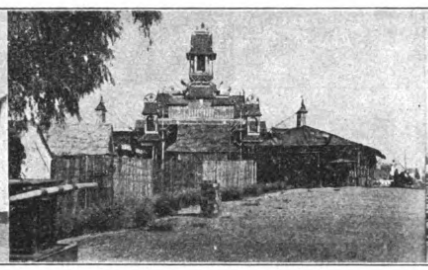
The latest advices from Peking offer little encouragement for an early conclusion of the foreign loan to cover the construction of this line through Honan and Hupeh as well as of the Szechuen line. Indeed, not a few authorities are of the opinion that the agreement pending will never be concluded. One of the reasons advanced is based on the strong sentiment in Honan and Hupeh against foreign money and foreign supervision. So widespread is this feeling that Peking realizes the wisdom of temporizing at this time.

We have some evidence in the recent news items that contracts with foreign engineers would not be renewed by the Kwantung Yueh-Han Railway, that Hunan and Hupeh are not wanting in moral support from Kwangtung.

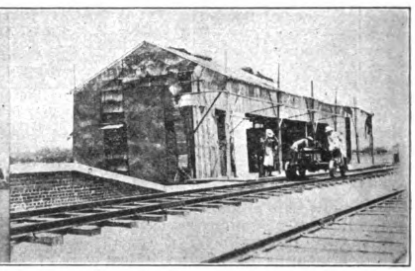


Courtesy J. S. Goodell, First Asst. Engineer.

CANTON-HANKOW RAILWAY CROSSING GATE AT SAI CHUEN



WONGSHA TEMPORARY STATION



TEMPORARY STATION AT LIN PING

That the three provinces are of one mind with regard to foreign loans is admitted by those familiar with the attitude of the directors of the Kwangtung Company.

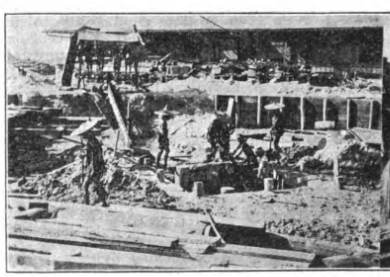
Foreigners usually criticize the methods of Chinese in carrying on railway construction especially with respect to organization and direction. In reply the Chinese officials point to the fact that the Chinese people are footing the bill, and if there is delay the loss must affect the Chinese more seriously than the foreigners interested. They say that they realize the necessity of railways and in their own good time they will be built. This attitude is largely due to the lack of tact on the part of many westerners in dealing with Chinese officials.

The western engineer is anxious to enforce his standards and to expedite construction. He is interested in the success of the enterprise and he cannot sympathize with an administration that does not appreciate the various elements that enter into economical direction. He grows impatient of petty local disputes and native prejudice, and soon his manner is expressive of his mental attitude. The Chinese naturally resent what they term lack of consideration and co-operation is then impossible.

Chinese engineers educated abroad are of the opinion that much of the anti-foreign feeling is due to the lack of consideration shown the wishes of the Chinese and disregard of Chinese customs in conflict with western commercial ideas. The exercise of greater patience and tact with an acceptance of Chinese methods as a basis of understanding, they claim, would greatly assist the foreigner in carrying out just such projects as the Canton-Hankow Railway. If the foreigner would bear in mind that he is not building a railroad for foreigners but for the Chinese and that the latter, after all, are the people who have the greatest interest in the success or failure of such an enterprise, he would go no further than to proffer advice in such a manner as to invite confidence and the greatest possible measure of co-operation.

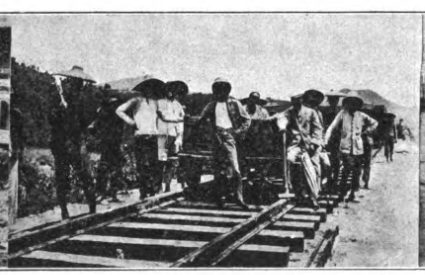
Chinese sentiment in Hunan may be said to be almost a unit in favor of the construction of the line with Chinese capital. The following communication published in the *Peking Daily News* reflects the spirit that prevails there:

"The question of foreign loans for industrial, commercial, and railway development in China is one of the most burning problems with the Chinese at the present day. It has troubled and is still troubling their minds, and every endeavour is being made to settle it by means that will produce the most satisfactory results both to China and the foreign syndicates concerned. A decade or so ago the people paid scarcely any attention to any question of this kind; now it is on the lips of every thinking Chinese and forms the great theme of discussion in the Chinese Press, which, though of comparatively recent birth, is wielding a mighty influence in moulding public opinion. This striking change in the national spirit of the people would not be regarded as surprising when it is remembered that conditions in the Empire were quite different then from what they are now. Broadly speaking, the Chinese focused their interests in the affairs of their family circles, outside which everything else was regarded with indifference. They held firmly to the principle of minding one's own business. With the rapid changes, not to say progress, she has undergone, however, the China of to-day is not the same China as that of ten or twenty years ago, and as affairs within her borders have reached such a stage that her people are at last compelled to adopt a different policy, they are determined to ascertain what is wrong with their country and to devise methods for its remedy. By establishment of numerous modern schools and colleges in the various provinces, western learning is fast spreading throughout the land, and the people, taught by the experience of past and present events, are beginning to see as they never saw and to think as they never thought before. They are constrained to use their eyes and ears and reasoning faculties in the hope of improving China and of freeing her with the help and advice of foreign friends who are deeply interested in her well-being. Foreign loans of the kind above mentioned are viewed by the Chinese in two different ways; either as one of the harmful agencies or, if properly contracted and the terms of the agreement be strictly adhered to, as a great blessing to the country. China, as pointed out and emphasized from time to time in the Chinese Press, has no objection whatever to legitimate foreign loans—in fact such loans

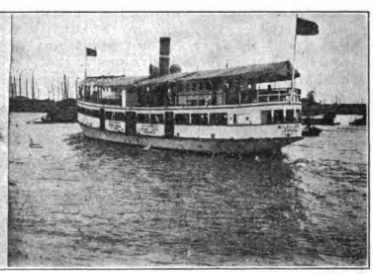


Courtesy J. S. Goodell, First Asst. Engineer.

CANTON-HANKOW RAILWAY. CONSTRUCTING CONCRETE CENTER PIER OF TURNTABLE AT WONGSHA



END OF TRACK. SECTION B. RESIDENT ENGINEER SHERWIN ON CAR



FERRY BOAT YUH LEE OWNED BY THE RAILWAY COMPANY OF THE THREE PROVINCES

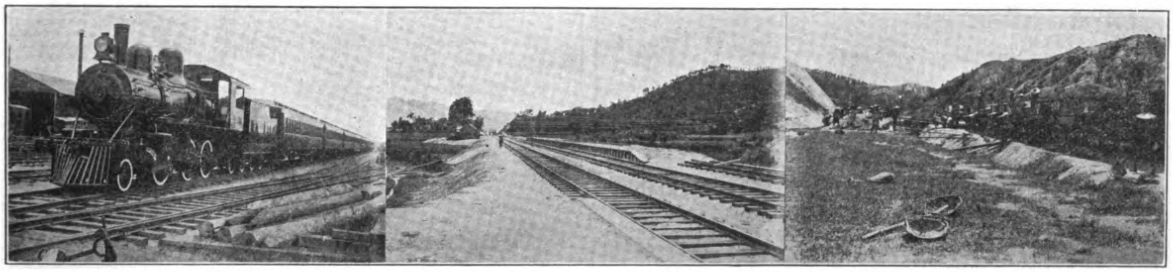
are welcome; it is only against foreign loans for securing political or semi-political rights or with ulterior motives that China objects to, and should object to with all her power, for, as has often been the case, it would surely involve her in serious trouble which would end in the loss of her rights and interests.

The Chinese have often tried to show what harm foreign loans of the latter description might do to China by citing the case of the late American Development Company, which has left a deep impression on their minds.

made directly in response to the appeal of the members of the Local Legislative Assembly of Hunan.

These members, who are nominated by the people, and are therefore their representatives, after having solemnly undertaken to perform the duty of persuading the people to subscribe capital for the construction of the railway, at once set to work with a view to procuring the desired results. They traveled everywhere, making stirring speeches in which they pointed out the duty of the people towards the railway,

With all these funds at their disposal, the Hunanese have not been slow in appropriating them for the construction of the railway. As already decided, that section of the line, from Tsuchow to Hsiangtan, will be opened for public traffic on the 15th day of the 8th month, and that section from Changsha to Tsuchow in about the middle of the coming 11th month. Work connected with the construction of the upper section from Tsuchow to Pinchow and the lower section from Changsha to Yaochow will be started simultaneously.



Courtesy J. S. Goodell, First Asst. Engineer.

CANTON-HANKOW RY. TRAIN AT WONGSHA

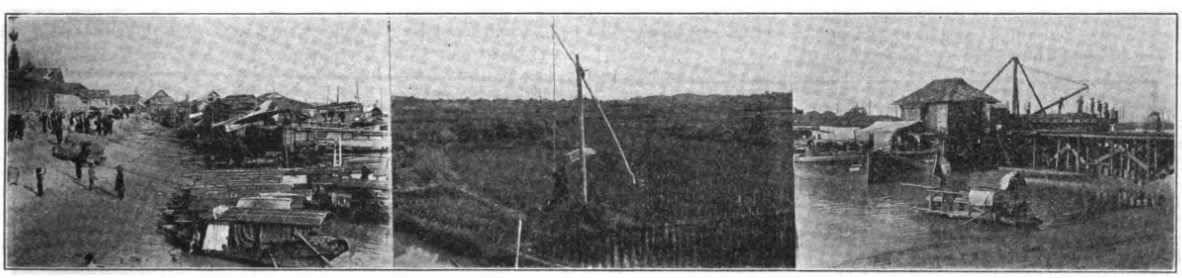
LOOKING NORTH FROM YING CHIN STATION

CONSTRUCTION TRAIN NORTH OF QUAN TIEN

From the day the case was settled, the desire of the Chinese for foreign loans for railway development has been sadly affected, especially among the people of the several provinces directly concerned. Hunan is now recognized as one of the most progressive provinces of China, with many modern schools and colleges for acquiring the new learning, and showing a keen appreciation of things foreign. The Hunanese fully realize the value and importance of railways, the introduction of which in their province they would hail with unbounded delight. As seen in the reports, published in the Chinese papers, that portion of the Canton-Hankow railway which runs through Hunan

and its manifold advantages to them. There are matters in which the Hunanese might not agree, but in this, the building of the railway with Chinese capital, they unanimously agree. The speeches had an electric effect on the minds of those who listened to them with breathless interest, and some of them were so touched that they actually shed tears, and all willingly pledged themselves to purchase shares according to the best of their ability. Resolutions were passed to the effect that, come what may, the railway will be built with Chinese capital. Through the action of the members the Hunanese are now in a position to build the railway with Chinese capital, for sufficient funds have

If, in direct opposition to the express wish of the Hunanese and without any regard for the rights they claim, the Canton-Hankow railway should be built with foreign loans, and not with Chinese capital, the consequences that would inevitably follow would in the opinion of many be very serious indeed. As previously mentioned, they regard this railway as something affecting their life and death—something that they must maintain at any cost. From what can be gathered up to the present, it appears that if their cry, "Chinese capital only" should be unheeded, if their strong protest against the introduction of foreign loans for the construction of the rail-



Courtesy J. S. Goodell, First Asst. Engineer.

RIVER BANK SOUTH FROM OLD WHARF, WONGSHA, CANTON

RICE IRRIGATION AT SAM WAH TIM

OLD WHARF AT WONGSHA

has received the closest attention of the Hunanese because, as they are convinced, it has a vital bearing on them. They regard it as something affecting their life and death, and are determined to leave nothing undone until their object of building it with Chinese capital is attained. They have made strong representations to the Government that it must be built with Chinese capital at any cost. They firmly believe that right is on their side, and are endeavouring in every way possible to carry their point with the Government. They welcome its construction; they have not the least objection to the acceptance of foreign loans by the Government, but what they really object to and will not cease objecting to so long as the question remains unsettled is the building of the railway with foreign capital. It must be understood that in Hunan all classes, from the humblest farmer to the highest official, have invested money in the railway, and the investment was

been raised to meet the necessary expenditure. It is carefully calculated that annually over $3,000,000 can be raised from actual cash shares, between $1,500,000 and $1,600,000 from shares to be paid with house rent collected at such large cities as Changhsa and Hsiangtan, over $100,000 from shares to be paid out of official salaries, and, as far as existing conditions are concerned, not less than $1,000,000 from shares allotted to merchants. All the subscribed shares have been definitely claimed, so that the money is always on hand ready to be used for the purpose for which it is intended. In connection with the redemption by China of that portion of the railway which was constructed by the American Syndicate, measures were adopted for the imposition of a salt tax and a rice tax, such taxes being capable of yielding large amounts, and from various sources, from which, including the Sanshui-Fatshan branch line, about $1,000,000 are obtainable every year.

way should ultimately prove of no avail, they would more than likely take further steps to defend their rights and interests. Disturbances may break out all over Hunan, possibly resulting in the loss of innocent lives and the destruction of valuable property. Foreign lives and foreign property there would be endangered, and it would give rise to serious diplomatic negotiations, not to say the calling out of the foreign men of war for the protection of same. But this apparent calamity, which nobody would like to see happen, can easily be avoided if the Chinese should be allowed to build the railway themselves without the use of foreign loans, and in view of what may possibly happen in the alternative, it seems necessary that something should be done to settle the question with the Hunanese on a fair and satisfactory basis. As already stated, the bone of contention with the

Hunanese is not the acceptance of foreign loans by the Government, but the use of foreign loans for the construction of the railway. Supposing, however, the Government should finally succeed by means of mere pressure exerted on the people in building the railway with foreign loans, even then, it may be assumed, the Hunanese would not stop taking further steps to defend their rights and interests. They would boycott the railway, and would cause such troubles and such difficulties as would paralyse all works of the railway.

The above is not written by an alarmist out of his imagination. It is based on facts gathered from reliable sources, showing the firm conviction and attitude of the Hunan people towards the Canton-Hankow railway, and therefore deserves the serious consideration of foreign capitalists who are interested in the development of railways in China.

Commenting on the above, the *Peking News* expresses the prevailing sentiment among foreigners who are consistent in their friendship towards the Chinese and are desirous of giving them square deal when it says:

"We think foreign money should be welcome for the development of China's immense resources and railways especially. We object to foreign money only when it carries political designs which tend to the impairment of China's sovereignty; when it means that China has to pay double for what she needs and to receive half for what she sells. As regards the scheme set forth for the purpose of raising funds from officials' salaries and the increase of salt taxation, etc., we are afraid the writer is a little too sanguine. Experience tells."

The Canton-Hankow Railway may be said to be divided into three parts. The section in Kwangtung province is controlled by the Kwangtung Yueh-Han Railway Co., Ltd., the Honan section by the Honan Yueh-Han Railway Co. and the Hupeh section by the Hupeh Yueh-Han Company. There is the Samshui branch in which each of the provinces have an equal interest and this line is controlled by what is known as the Canton-Hankow Railway of the Three Provinces.

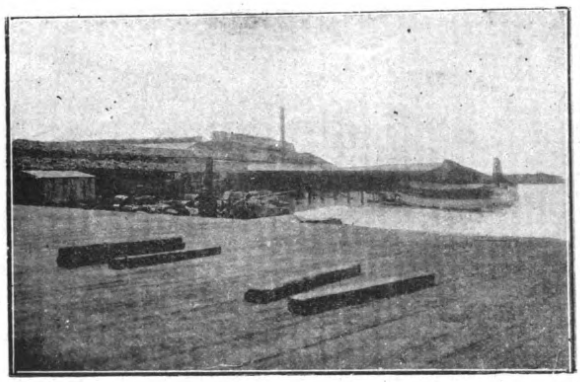
To understand this, it is necessary to revert to 1905 when the American China Development Company turned over their rights to the Chinese. Among the assets was the completed Canton-Samshui branch 30 miles in length, then operating. This line was taken over by the three Provinces under which management it has been successfully operated with large revenue return annually. The control of the main line was then divided among the three provinces, the gentry of each province assuming the responsibility for the construction and operation of the line within its boundaries.

The total length of the main line as surveyed is about 750 miles of which 220 miles are in Kwangtung. When the American-China Development Company retired the work accomplished on the main line from Canton consisted of about twelve miles of embankment and about eight miles of steel. Work had been suspended in the fall of 1904. The latest reports from the Kwangtung section are to the effect that there are 60 miles operating on the main line north of Canton to a point called Kau Wan Shek and the track has been laid for a further distance of ten miles.

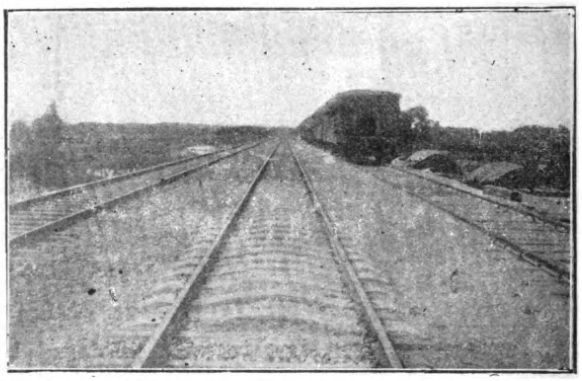
Grading is reported finished for a distance of 110 miles to Yingtak where the completion of the large bridge at that point is necessary before much is accomplished beyond.

This bridge has two 200-foot spans and four 60-foot spans. About mile 80 there is another bridge being constructed, but the completion of the line to Yingtak offers few serious difficulties. The work is up on the different intervening sections between the unfinished cuts and bridges and awaits the advance of the steel and construction trains to put on the finishing touches. However, unforseen delays, interruptions and disputes prevail so that the best results may not be anticipated.

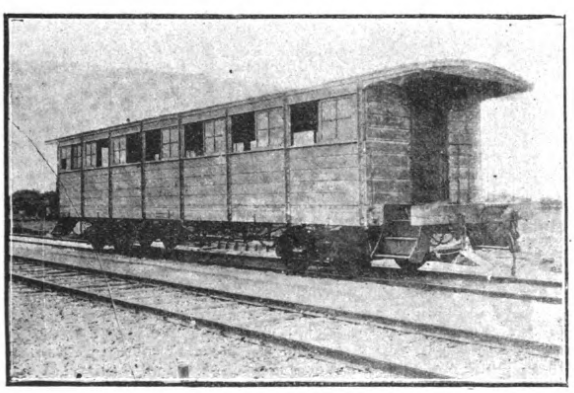
Sir Liang Chentung while president of the company succeeded in accomplishing more real results than any of his predecessors. During the last year there have been a number of investigations by direction of Peking and these have been marked by suspension of work rumours of wholesale discharges and other agitation that seemed to affect the railway management throughout and postpone active work.



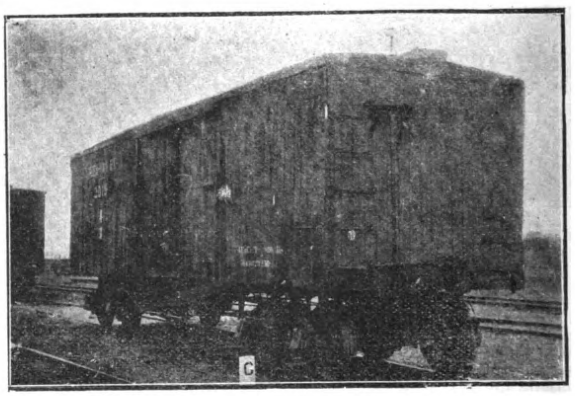
CANTON-HANKOW TERMINUS AT SHEK-WAI-TONG



CONCRETE TIES USED WEST OF SHEK WAI-TONG



CANTON-HANKOW OLD SECOND CLASS CAR NOW USED FOR THIRD CLASS TRAFFIC



TYPICAL BOX CAR

THE FAR EASTERN REVIEW

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MANILA, SHANGHAI, AND YOKOHAMA, OCTOBER, 1910

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HONGKONG AND HER RAILWAY

Hongkong inaugurated a new era in her history on October 1st, when Sir Henry May declared the British section of the line to Canton open to traffic. This era might be known as one of fulfilment of the hopes of the promoters of the enterprise and the completion of this first link connecting the British colony to the Chinese empire has been marked by a general expression throughout the colony of loyalty to the enterprise and of a desire to assist in making the venture a success.

The comment in the local press involves general acceptance of the statement made by Mr. E. S. Lindsay, M.I.C.E., Chief Resident Engineer, quoted elsewhere, and where formerly there was a disposition to criticize, we find general appreciation, due largely to a more comprehensive knowledge of the serious character of the undertaking and the almost impossible engineering difficulties overcome.

The *China Mail* does not expect immediate results but leaves the outcome of this railway connection hopefully to the future. That paper says:

"With the opening on Oct. 1st of the British section of the Kowloon-Canton Railway, Hongkong enters upon a new chapter of its existence. What will be written in that chapter Father Time will alone disclose. The high hopes which were entertained when this particular railway project first took shape and form in men's minds are not destined, we fear, to be realized, at least for a long time to come. For it must be evident to the merest tyro that the little bit of railway track running through the hinterland of British Kowloon can be but a small factor in securing that development of trade and commerce which the Colony so ardently longs to see. But it is a means to an end, and as such justifies its existence. Someday when the great trunk line of central China has been constructed and put into regular working order, Kowloon will be the southern end of a line of steel rails which, running through some of the richest districts of China, will, via Hankow and Peking, connect with the Manchurian railway system and thereby with the Siberian line running to Moscow. And as the Far Eastern terminus of such a system Kowloon should, in the years to come, swell into a place of much importance. But many a long day will have to drag its weary length to eventide ere we see this magnificent dream realized. For the moment we can but hope that the through connection with Canton will be realized by next July and so enable a commencement to be made in the exploitation of the densely populated delta which has the City of Rams as its provincial centre.

"The immediate prospects ahead of our little bit of line are not particularly bright. Its cost, so very much above the first entertained idea, will make the earning of interest on the outlay alone a very heavy task, and for many years we fear that the line will be a white elephant, the expense of whose up-keep will fall heavily on the Colonial Treasury. The political importance of the line outweighs every other consideration. We had to build it in the future interests of Hongkong—and we hope posterity will be duly thankful to us for the sacrifices we have made."

The *Hongkong Daily Press* believes, with Sir Henry May, that the immediate effect of British section will be the more rapid development of the New Territory which has suffered through lack of communication, but looks forward to the greater benefits of international connections in the future. We quote:

"Saturday October 1st, 1910, will be a memorable day in the history of the colony of Hongkong. After many years of waiting the community had the satisfaction of witnessing the opening of a railway line through the British territory of Kowloon, and can now look forward with eager anticipation to the completion of the Chinese section—more than four times the length of the British section—which will give us direct connection with the city of Canton, the great metropolis of South China. If all goes well, the entire length of 112 miles will be open to through traffic long before this time next year. We shall then be watching more closely than now the progress being made with the construction of the great arterial line which is to connect Canton with Hankow, and contemplating the prospect of some day being able to travel from Hongkong, via Hankow and Peking thence across Siberia to Calais. That, it is true, is looking a long way ahead. Meanwhile it remains for the community at whose cost the short British section of the line has been made to do all in its power to promote in every way its usefulness and its prosperity. The undertaking has been a costly one for a small Colony, but we are glad to have it on the authority of an expert of the wide experience of the present General Manager of the line that, having regard to the nature of the work, its cost compares favourably with similar undertakings elsewhere. What, however, is necessary at the present time is to emphasise the original intention of the railway, for as Mr. Lindsey very appositely remarked in the course of his speech "the original intention is liable to be lost sight of when, after a railway is finished, traffic sufficient to pay for its working and the interest on its cost is not immediately forthcoming." Probably it will be some years before the revenue covers even running expenses, to say nothing of interest. Consequently in the history of the undertaking which appears on another page we have deemed it important to give special prominence to the main considerations which weighed with those who so strongly advocated the construction of this line a few years ago. No doubt its most immediate effect will be to encourage development in the New Territory, a subject on which Sir Henry May enlarged in his address on Saturday. But there are even more substantial reasons for the railway. So long as Hongkong remained without railway connection with Canton, while great railway undertakings were projected to connect Canton with the interior of China, the Colony was threatened with the creation of a rival port in the vicinity of the Bogue which would serve as a seaport terminus of the great trunk railway. As the China Association pointed out to the Government, "the bare possibility of such a contingency is sufficient to arouse the liveliest anxiety in the minds of all persons interested in the welfare and prosperity of the Colony, not alone on account of the individual losses which would ensue from the enormous depreciation of property and investments, but also because of the severe blow it would inflict on British influence and prestige throughout the whole of China." These are weighty considerations, and now that the British section of the line has been constructed and we see an early prospect of through traffic being opened with Canton, we can renew our thanks and congratulations.

"Trade has in other lands invariably sprung up around the railways and we do not see why the same phenomenon should not occur in southern China. True the Canton river is a formidable competitor and always will be, but with the laying down of feeder branch lines to important centres of population and industry, the railway should tap new sources of potential wealth which the riverine trade cannot possibly touch or affect. Besides, if the experience of Japan is duplicated in her consanguinous neighbour, the Chinese will not be long in acquiring the railway habit. When a man can cover a distance in a few hours with ease and comfort which used to take him days of toil and worry to accomplish, it is not long before he finds it necessary to repeat the journey. When railways were first built in Japan people said that it would be hopeless to expect much passenger traffic as the habits of the Japanese, apart from certain pilgrimages made at different ages and times, made him a home-keeping human. How completely these old prophecies have been exploded any one who has travelled in Japan can tell you. We venture to think it will be the same in China."

Manila does not propose, apparently, to remain idly by and permit Hongkong to capture all South China trade, perhaps for the reason that Americans have not forgotten the loss of prestige and trade resulting from the American-China Development Co. fizzle and would redeem their position. The *Daily Bulletin* is not so sanguine of results but believes Manila's future opportunities should be looked into. That paper says:

"It might be said that had the American-China Development Company carried out their contract with China on the Canton-Hankow

the Kowloon-Canton would very probably not have been built. The fizzle of the A. C. D. made it possible for Hongkong to secure terminal connections and where a modern harbor for Canton was proposed by the Americans to handle the Canton-Hankow freight, theBritish port of Hongkong will now take care of it and have the advantage of being a distributing center with rail connections throughout the richest sections of the empire.

"Her only probable competitor for this South China trade would be Manila, if the latter wakes up. It will require years of preparation on the part of the Philippine metropolis to secure any portion of this trade but there is plenty of time. It would mean a South China harbor and a well equipped steamship line engaged in reciprocal trade with the Chinese.

"Freight rates from Manila must meet the rates over the 110 miles of railway between Hongkong and Canton and we must be in a position to secure return cargoes. However, this matter is worth looking into. Manila must not sit idly by and be satisfied with the crumbs from South China. We would suggest that the Merchants' Association and the Cantonese merchants of Manila get together and see what can be done. Competition between Hongkong and Manila for this trade would prove interesting and instructive and at the same time test out the capacity of the two nations of shopkeepers at their respective jumping off places."

DEVELOPMENT WORK OF THE PHILIPPINE RAILWAY COMPANY IN THE VISAYAN ISLANDS

The driving of the last spike of the Panay Line of the Philippine Railway Company brings us to the consideration of what the completion of these lines of railroad means to the country, in general, through which they pass.

The connecting up of the rails on the Island of Panay marks the beginning of the end of the largest piece of construction work financed by American Capital in the Far East Despite the greatest difficulties on account of labor shortage, weather conditions in the Islands, and the strained financial conditions in the United States, this work has been pushed steadily for the past three years. It will take possibly another year to replace the temporary wooden structures with concrete and steel bridges, complete the station buildings, widen the embankments to full width, put the required amount of ballast under the track, and in general put the last thirty miles in a state of final completion.

The lines on Cebu and Panay run through some of the richest country in the Philippines, but owing to cattle diseases, the insurrection, the lack of modern methods of cultivation, and the almost total absence of any means of transportation, mile after mile of the richest land has lain idle for years.

With characteristic American energy, the management of the lines have set themselves to the task of developing the resources of the country tributary to the railway.

Realizing that the methods in common use among the Western railroads of the United States will not suffice in this country, they are endeavoring to accomplish the same results by other means.

The territory through which the road runs on the Island of Cebu is the most thickly populated section of the Archipelago. In spite of this, there is much land that is not under cultivation and the land that has been planted, in many cases, is not producing more than fifty per cent of its possible output. Corn, hemp and maguey, sugar and tobacco are the principal products.

The Railway Company has imported from the United States several different varieties of seed corn which will be distributed, at actual cost, to the farmers. Railway representatives will closely supervise the planting and cultivation of the corn. When it is mature, the seeds which produce the most corn per hectare will be decided upon and arrangements made to furnish this seed to all planters.

There are many large tracts of land, which are capable of growing maguey, not now under cultivation and much of the maguey now raised is improperly planted and the leaves cut before they are fully matured. The mailing of circulars and talking with the people has little, if any, effect. In order to give them a practical demonstration and object lesson as to the proper method of cultivating maguey, the Railway Company borrowed from the Bureau of Agriculture a Prieto maguey stripping machine and set it up on two flat cars. This machine was taken to various stations and set out on a side track. All the farmers were invited to bring in their maguey and have it stripped free of charge. When a farmer brought in his maguey, there was a representative of the Railway on hand to show him what, if anything, was wrong with his maguey. They stripped some of the maguey that had been properly planted and was fully matured, showing him the difference in the fibre, and then instructed him fully as to how he should handle his fibre in the future. In order to make this object lesson doubly strong, the Railway Company arranged through the Cebu exporting firms to let them act as buyers for their account. When a farmer brought in his maguey and had it stripped, the representative of the Railway immediately offered him the market price for the grade of maguey which he had and told him that if he had produced maguey equal to samples shown him, he would have been paid considerably more for it. This was an argument that the farmer could not refute, and within a short time the quality of fibre produced was so improved that the price for first class maguey was increased from ₱6.50 to ₱9.00 per picul and to-day Cebu maguey ranks higher than any other maguey raised in the Islands.

Acting as distributing agents for the Bureau of Agriculture, the Railway Company have furnished the planters of Cebu 4,000,000 maguey plants, free of charge, which have been set out under the supervision of the Railway Company. A record is kept of the parties to whom the plants are furnished and where they are planted and they are inspected at frequent intervals by the representatives of the Railway Company and the Bureau of Agriculture. In about four years Cebu will rank first in the cultivation of maguey and derive an immense revenue from this source.

At the present time the produce of the country in both Cebu and Panay is bought up by Chino and Filipino traders and, after passing through the hands of two or three middlemen, finally reaches the exporter The producers have not the slightest idea as to the prevailing prices at the market points and are at the mercy of the local buyers. To obviate this difficulty the Company gets out every two weeks sheets showing the prices paid for all commodities produced in the territory tributary to the line, at the various market points along the line. These price lists are posted at each station. In this way the farmer can ascertain at a glance the prices paid for his product at all points along the line and ship it wherever he can get the most for it. This is likewise a guide for buyers.

In order to encourage the people to sell direct to the exporters or consumers, arrangements have been made with steamship lines running out of Iloilo and Cebu to Manila, whereby through bills of lading are issued at stations along the railway direct to Manila. Freight so billed is switched down onto the water front and loaded onto the steamer direct, thus eliminating any charge for transfer If there is any transfer charge such as lightering across the river at Iloilo, it is absorbed by the railway and steamship company, so that the rate to the shipper is simply the railway plus the steamship rate from his station to Manila, and vice versa.

In order to encourage the large firms to send buyers out to deal directly with the people, the Company allow them to build bodegas, according to design approved by the Company, on their right of way convenient to the loading tracks, at a nominal rental for the land, and in some cases have even gone so far as to permit bona fide buyers to use their freight houses to store freight until time to send it to the steamer for Manila.

Each station is provided with a sample rack on which are exhibited choice samples of the products of the surrounding country, together with instructions in Visayan for proper planting and cultivation in order to raise similar grades.

The natives have already begun to appreciate the work of the Railway Company in this direction and are holding their products for better prices and the local buyers are forced to pay the farmer what product is worth.

There are many cases of farmers three or four miles from the railway being absolutely cut off on account of lack of passable roads. The Company is making strenuous efforts to get the municipal, provincial and insular governments to put the existing roads in condition or construct new roads from such districts to the Railway stations.

They have representatives scouring the country talking with hacenderos and planters, finding out what they need, the conditions under which they are working, rendering them assistance where possible, and encouraging them in every way to put all the land under their control under cultivation. Land that is for sale is noted and prospective purchasers encouraged to apply to the Industrial Department of the Railway for assistance in buying land. Every effort is being made to get outside capital interested in the Visayas.

New industries are being encouraged in every possible way, the railway seeking out new industries which are suitable for the country, finding a market for their output, and advising them as to the purchase of raw material.

A canvas is being made on Panay to see how many farmers in each district would contract for the use of cable plows on their land. If a sufficient number will go into it, the Company will endeavor to get such plows put in each district. The agents of the Company act as selling agents for agricultural implements and up to date plows are put on exhibition at each station, together with any other agricultural implements that firms may desire to exhibit while working the adjoining territory.

Through the efforts of the Railway Company, one of the missionary societies in the Island of Panay has taken steps to secure 200 hectares of land on mile 42 of the Railway and will start immediately an industrial school. They have about 100 boys in their charge and will make a model farm and at the same time teach the younger generation modern methods of cultivation.

An effort is being made to get the Bureau of Education to start a similar school on some land which they own near Passi. Such a school would, if properly managed, be practically self-supporting. As nine tenths of the wealth of the Islands must always come from the products of the soil, it would seem that a large percentage of the funds and attention of the Bureau of Education should be devoted to educating the people along agricultural lines. Such schools would be practically self supporting and would not only teach the boys in the school the proper methods, but would turn them for life toward agricultural pursuits, and at the same time serve as an object lesson to all the older farmers who could visit the schools. It speaks highly for the Baptist Missionary Society in the Visayas that they have been the first to take up this work.

It will be a long, hard undertaking, and probably cannot be accomplished without the active assistance of the Bureau of Agriculture, but the Railway Company hopes to make the Filipinos see the advantage of putting every available hectare of land under cultivation, using modern methods of farming and preparing their crops for the market. If they are successful, within ten years the Visayan Islands of Panay and Cebu will be two of the richest Islands in the Archipelago.

CHINA'S SENATE

Constitutional government for China was advanced this month by the convening of the National Senate of two hundred members, half of whom were appointed by the Prince Regent and the balance selected from among two hundred candidates named by the provincial assemblies.

On October 3, the following decree was published:

"We have recently decreed that the 20th day of the 8th moon this year has been selected as the day of the first meeting of the Senate and the members should prepare all things necessary previous to the opening of the Senate

CONTRACTING NEWS

BIDS OPENED.—Bureau of Public Works, Manila.—A two 23-meter span reinforced concrete bridge.—The bidders were: P. Corona and A. Luraschi, ₱39,489; F. D. Hayden, ₱40,412; John Gordon, ₱43,900; A. F. Allen, ₱48,500; the Atlantic, Gulf and Pacific Company, ₱55,634; and the Manila Construction Company, ₱57,352.

A TWO 7-METER SPAN REINFORCED CONCRETE BRIDGE.—Bidders were: F. D. Hayden, ₱8,500; P. Corona and A. Luraschi, ₱8,483; Macchetti Brothers, ₱8,777; Manila Construction Company, ₱9,790; and John Gordon, ₱9,400.

GIRDER BRIDGE OF FIVE 5.86 METER SPANS ON REINFORCED PILE BENTS.—Bidders were: A. F. Allen, ₱11,385 and Corona and Luraschi, ₱14,800.

PLUMBING AND EQUIPMENT FOR LOS BAÑOS LABORATORY.—Bidders: S. C. Choy, ₱3,900 for furnishing and equipment and ₱1,924 for the plumbing; John Gordon, ₱6,100 for furnishing and equipment, ₱2,250, plumbing; D. E. Blossom, ₱2,125 for plumbing; the American Hardware and Plumbing Company ₱2,804 for plumbing.

ERECTION OF NEW HOSPITAL SERVICE BUILDING, REINFORCED CONCRETE.—Bidders: The Manila Saw Mill Company, ₱46,980, the work to be completed in 240 days with an additional cost of ₱165 for the covered passage; The Manila Construction Company ₱51,275, in 240 days; Coleman and Goodman ₱52,850 in 240 days; M. B. Zarate ₱54,400 in 250 days; O. F. Campbell ₱56,927 in 240 days; and John Gordon ₱58,700 in 250 days with an additional ₱110 for the covered passage.

ZAMBOANGA ELECTRIC LIGHT, POWER AND WATER SUPPLY.—There was only one bidder, the Zamboanga Company.

PROPOSALS INVITED.—Tientsin-Pukow Railway (Southern Section). Third Class Passenger Cars. Sealed tenders are invited for the supply to this Railway of twelve (12) third class passenger cars. Specification and Blue Prints of same may be obtained from the Railway Purchasing Agent, Taotai Y. C. Tong, Imperial Chinese Telegraphs, The Bund, Shanghai, on the payment of a fee of Dollars Twenty-five ($25.00) which amount will be returned, upon application to the Agent, on receipt of a bona fide tender.

Tenders should be addressed to the Managing Director, Tientsin-Pukow Railway, Southern Section, Nanking, and should be clearly marked on the outside "Tender for Twelve Third Class Passenger Cars, Indent No. 104." They will be opened at the Head Office, Nanking, at 10 a. m., 1st December, 1910. No tenders submitted after the hour mentioned will be considered.

Tenderers are requested to carefully note the following conditions: All the Cars must be delivered "ex ship's slings" on the Railway Wharf at Pukow at Contractor's risk and cost, before end of June, 1911. A fine of Five Shillings per Car per day will be deducted from the contract price as liquidated damages for each day car or any part of it remains undelivered after the date mentioned. Customs Duty and Wharfage Dues at Pukow for Railway account, all other charges for Contractor's account.

Quotations must be in Sterling and the names of proposed makers must be stated. Payment will be made Twenty (20) days after complete acceptance of each shipment, in Shanghai or London at Contractor's option.

PUBLIC WORKS DEPARTMENT, SYDNEY, NEW SOUTH WALES.—Coal Loading Plant capable of delivering into ships' holds about 1,000 tons of coal per hour at each side of a new jetty to be erected at Port Kemble, South Coast, N.S.W. Contractors' Room, Public Works Department, Sydney; and Office of the Agent-General of New South Wales, London. Bids opened January 9th, 1911.

CHIEF QUARTERMASTER, PHILIPPINES DIVISION.—Puttees.—Sealed proposals, in triplicate, subject to the usual conditions, for furnishing 280,000 Pairs Woolen Puttees, will be received here until 11:00 a. m., November 1st, 1910, and then publicly opened. Information and blank forms furnished upon application.

CONSTABULARY CLOTHING SUPPLIES.—Sealed proposals in triplicate, subject to the usual conditions, will be received at the office of the Chief Supply Officer Bureau of Constabulary, Old Oriente Building, Manila, until ten a. m., December 17, 1910, and then opened in the presence of attending bidders for furnishing the Bureau of Constabulary the following articles:

6,000 khaki hats.
24,000 cotton undershirts.
7,500 spiral-cut khaki woolen puttees for enlisted men.
50,000 yards of khaki cloth.

Bids must be accompanied by samples.

Time for delivery to be stated in proposal and to be considered in awarding contract.

Samples may be seen and blank proposals obtained at the office of the Property Officer. Bureau of Constabulary, Old Oriente Building, Manila.

As a guarantee of good faith each proposal must be accompanied by a certified check for ten per cent of bid. Letter of guarantee from bank will be accepted in place of check.

BUREAU OF PUBLIC WORKS, MANILA.—Reinforced Concrete Bridges.—Sealed proposals plainly marked "Proposals for Abucay, Tapulao and Hermosa Bridges," will be received at this office or at the office of the Provincial Treasurer, Balanga, Bataan, P. I., until 11 a. m., November 6th, 1910, and then publicly opened for furnishing all material, labor and plant and constructing complete, three reinforced concrete girder bridges, consisting of three 5.5 meter spans on E. C. Pile bents; two 7.5 meter spans on R. C. Pile bents; and one 8 meter span, located in the Province of Bataan and known as the Abucay, Tapulac and Hermosa bridges respectively, in the manner and on the conditions set forth in the form of proposals, plans and specifications, copies of which with other information may be obtained at either of the above-mentioned offices.

CEBU WATERWORKS.—Sealed bids will be received by the Director of Public Works until 11:00 a. m., November 15, 1910, and thereupon opened, for the furnishing of material for and the construction of Osmeña Water Works System for the Municipality of Cebu, Cebu, Philippine Islands.

The proposed works will consist of a circular reinforced concrete dam with intake appurtenances and value chamber; a concrete spillway; a 4,000,000 gallon reservoir in excavation; a 14" and 16" main pipe line six and a half kilometers long; a distribution system 4" to 14" diameter pipe twenty one (21) kilometer long; and the necessary gates, valves, valve boxes, fire hydrants, and appurtenances.

Specifications, general plans, and blank forms of proposal may be obtained at the office of the Director of Public Works, Manila, P. I., and from the office of the District Engineer, Cebu, P. I.

Each proposal must be accompanied by a certified check for 10% of the amount of the bid drawn by the bidder on a local bank and made payable to the Insular Treasurer as a guaranty that the bidder, if awarded the contract, will, after due notification, promptly enter into contract and furnish acceptable bond in the sum of twenty (20) per cent or a certified check for ten (10) per cent of the sum total of the contract price for the faithful performance of the work.

The right is reserved to reject any and all bids or waive informalities.

REINFORCED CONCRETE HOSPITAL.—Sealed proposals, in triplicate, subject to the usual conditions, for the construction of Two Concrete Officers Quarters and a Concrete Hospital Ward at Fort William McKinley, P. I., will be received here until 11:00 a. m., October 31st, 1910, and then publicly opened.

SALE OF HULL.—Sealed proposals, in duplicate, will be received at the Office of the Chief Quartermaster, Department of Mindanao, Zamboanga, P. I., until 3:00 p. m. December 7th, 1910, and then opened in the presence of attending bidders for the Hull of the Quartermaster Launch "Atlanta." Proposals must be accompanied by Certified Check, payable to the order of the Chief Quartermaster, Department of Mindanao, in the sum of ten (10%) per cent of the amount of bid. Information furnished upon application at this office. F. G. Hodgson, Assistant Quartermaster General, U. S. Army.

BUREAU OF SUPPLY, MANILA, P. I.—Hay and Oats.—Sealed proposals in triplicate will be received at this office up to 11 a. m. November 10th, 1910, when they will be opened in the presence of the attending bidders, for furnishing and delivering hay and oats.

SCHOOL SUPPLIES.—Sealed proposals in triplicate will be received at this office up to 11 a. m. November 25, 1910, when they will be opened in the presence of the attending bidders, for furnishing and delivering school supplies.

Proper forms and specifications may be had on application to this office.

BUREAU OF PHILIPPINE CONSTABULARY.—Shoes.—Sealed proposals in triplicate, subject to the usual conditions, will be received at the office of the Chief Supply Officer, Bureau of Constabulary, Old Oriente Building, Manila, until ten a. m., February 17, 1911, and then opened in the presence of attending bidders, for furnishing the Bureau of Constabulary

10,000 pairs of shoes.

Bids must be accompanied by samples.

Time for delivery to be stated in proposal and to be considered in awarding contract.

Samples may be seen and blank proposals obtained at the office of the Property Officer, Bureau of Constabulary, Old Oriente Building, Manila.

As a guarantee of good faith each proposal must be accompanied by a certified check for ten per cent of bid. Letter of guarantee from bank will be accepted in place of check.

PUTTEES.—Sealed proposals in triplicate, subject to the usual conditions, will be received at the office of the Chief Supply Officer, Bureau of Constabulary, until ten a. m., January 11, 1911, and then opened in the presence of attending bidders, for furnishing the Bureau of Constabulary.

1,000 pairs of puttees, woolen, spiral, for officers.

Bids must be accompanied by samples.

Time for delivery to be stated on proposal and to be considered in awarding contract.

Samples may be seen and blank proposals obtained at the office of the Property Officer, Bureau of Constabulary, Old Oriente Building.

As a guarantee of good faith each proposal will be accompanied by a certified check for ten per cent of bid. Letter of guarantee from bank will be accepted in place of check.

FAR EASTERN RAILWAY NEWS

THE PEKING-HANKOW RAILWAY LOAN.—It will be remembered that a loan for £5,000,000 was floated in 1908 for the redemption of this line and recently the announcement was made from Peking that the net earnings during the twenty months since the Government took it over amounted to Tls. 3,640,000. Now comes the report that a further loan of £450,000 has been issued, the proceeds of which will be utilized for repairing the line and adding new equipment. It is pointed out by several newspapers that the net profits are far from an adequate return on capital invested and that the necessity for the further loan to maintain the line in satisfactory condition reflects discredit on the system of operation in vogue which does not provide for proper upkeep within the earning capacity of the line. No official explanation of the conditions that made the loan necessary has been made public.

JAPAN'S RAILWAY DEVELOPMENT.—It is the purpose of the Railway Bureau to supersede the narrow gauge by the standard as rapidly as possible, but it will grant permission for the construction of the smaller gauge by private corporations for the present.

A statue is to be erected in honor of the late Viscount Katsui Inouye who, as Director General of Government Railways, was identified with the rapid growth of intercommunication in the empire.

Workshops covering an area of 3,000,000 square feet are proposed by the Railway Bureau and will be located at a point near Tokyo. The present shops at Shimbashi will be included in this plant, and it is expected they will be opened about the beginning of 1913. These shops will turn out cars, equipment of all kinds and do general repair work.

Recent inspection by the Railway Bureau developed serious damage to railway ties on the different lines occasioned by the destructive work of white ants. An effort is being made to secure a preventative to be applied to all new timber used for this purpose.

Charters were granted last month for the construction of two light railways, one seven miles in length connecting Yoshina and Oyodo to cost 200,000 yen and the other about the same length joining Fukuyama and Tomonosu.

CHINA'S PROJECTED RAILWAYS.—Mr. W. P. Ker, H. B. M. Attaché at Peking, gives the following list of projected lines with approximate mileage:

Kirin—Changchun (Kuanchengtzu) (Chi-Chang) Railway.—This line, the surveys for which are completed, will be 80 miles long; construction was to commence in the spring of this year.

Kirin—Hunchun Railway.—This line will be 240 miles long, and is to be undertaken on the completion of the Kirin—Changchun line.

Chinchowfu—Aigun Railway.—The preliminary agreement for this railway was signed in January, 1910, for American loan and British construction; the length of the line will be 750 miles.

Kalgan—Suiyuan (Chang Sui) Railway.—Preliminary surveys have begun on this line, which will be 180 miles in length, and the route will probably be *via* Tatungfu. Trains are expected to run as far as Tienchen (Shansi), a distance of 50 miles, in the spring of 1912, and an extension is intended later to Urga and Kiakhta.

Chengtingfu—Tehchow Railway (110 miles).—This line will connect the Peking—Hankow and Tientsin—Pukow railways.

Chefoo—Weihsien Railway (170 miles).—This line will connect Chefoo with the Shantung Railway. Progress is delayed for the want of funds.

Tatungfu—Puchowfu (T'ung-P'u) Railway (450 miles).—This railway will connect the north and centre of Shansi province with the Shensi Railway at Tungkwan, south of Puchowfu (see below). Only the construction of the section from Taiyuan to Pingyaohsien (60 miles) appears to be in immediate contemplation.

Tungkwan—Honanfu (Hsi T'ung) Railway (730 miles). This line was surveyed in 1909.

Sianfu—Iungkwan (Lo-I'ung) Railway. (85 miles).—This line was surveyed in 1909.

Sianfu—Lanchowfu Railway (80 miles).—This line was noted in the programme of the Board of Communications as to be surveyed in 1911, but the project is still somewhat indefinite.

Lanchowfu—Iliju Railway (1,250 miles).—No definite arrangements have been made.

Kaifeng—Suchowfu Railway (175 miles).—This line was surveyed in 1909.

Suchowfu—Tsingkiangpu (Ching-Hsu) Railway (120 miles).—The construction of this line has been begun from Tsingkiangpu: it is intended to be completed in 1911.

Tringkiangpu—Haichow (Ching-Hai) Railway (70 miles).—This last section is intended to provide an outlet to the sea for the great trunk line from west to east, which will be formed by the execution of projects 8, 9, 12 and 13 above noted, in addition to the existing line from Honanfu to Kaifeng.

Tsingkiangpu—Kwacho (on the Yangtse opposite Chinkiang Railway (more than 100 miles).

Sinyangchow—Fengyang or Pukow Railway (270 miles).

Chaochowfu or Swatow via Waichow to Shek-lung to Shunchun Railway (200 miles).—These are alternative projects for connecting Swatow with the Canton district and the Canton—Kowloon Railway.

Macao—Fatshan Railway (on the Canton—Samshui line) (75 miles).—A concession for this line was granted to a Portuguese syndicate in 1902.

Kweilin—Chuanchow (Kwangsi) Railway (80 miles).—Preliminary surveys were made for this railway in 1909, but owing to lack of funds construction has not begun.

Langson—Lungchow Railway (46 miles).—This is the proposed French extension, metre gauge, of the Hanoi—Langson line. It is proposed to continue this line to Nanning (150 miles.)

Yunnanfu—Szechuan Railway (450 miles).—To Suifu or Luchow. Two American engineers were engaged by the Viceroy of Yunnan to survey this line in 1909.

Bhamo—Tengyueh (Tien-Mien) Railway (123 miles).—Preliminary surveys have been completed; the line will be of 2 ft. 6 in. or metre gauge.

SIAMESE ROYAL STATE RAILWAY.—The following excerpts from the report for 1909-10 are of interest:

Of all events during the year under report the most noteworthy were the inauguration of the sections Ban Dara-Utaradit-Pang Ton Pung and Ban Dara-Sawankaloke, as also the opening of the River Line, connecting Bangkok Terminus with the Menam river at Chong Non See.

LENGTH OF LINE.

The new sections:

Ban Dara-Utaradit	28.2 Km.
Utaradit-Pang Ton Phung	24.3 Km.
Ban Dara-Sawankaloke	28.7 Km.
Totalling	81.2 Km.

were opened for traffic on 15th August, 1909, bringing the total length open to 926 Km., i. e. 774.6 of standard gauge (1.435) and 151.4 of meter gauge 926 meters total.

Average length during the year is 895.7 (803.3), increase against previous year 11.50%, leaving only 19 Km. of standard gauge (Pang Ton Phung to Meh Puak) to be completed and probably opened to traffic during the year 129.

The financial result of the working of the State Railways for the year 128 was a net gain to the state of Ticals 2,310,792 after meeting the working expenses and contribution to renovation fund. The gross receipts were Tcs. 4,303,962, an increase of Tcs. 114,978. The working expenses were Tcs. 1,706,202, an increase of Tcs. 48,265.

Though the average length of the line shows an increase of 11.50%, the gross-receipts comparatively have an increase only of 2.74%, which falling off can mostly be accounted for the sparseness of population in the newly opened districts.

Decrease in the percentage of expenditure to gross receipts is chiefly due to reduction of rates for daily labor. Increases are accountable partly to falling off of traffic receipts and partly to increase of the staff.

Passengers.—There were decreases totalling 165,554 in the number of tickets sold on the Sections Bangkok to Ban Phaji, Ban Phaji to Korat, Bangkok to Petriu, and Bangkok Noi to Petchaburi. The decrease in receipts on these sections amounted to Tcs. 103,067. There were increases on all the other sections totalling 163,376 in the number of tickets sold, and Tcs. 131,545 in receipts.

The increases on sections Ban Phaji to Paknampoh, Paknampoh to Pitsanuloke and Pitsanuloke to Bandara are evidently the signs of gradual development of traffic, and with regard to the increases on sections Ban Dara to Utaradit, Utaradit to Pang Ton Phung, and Ban Dara to Sawankaloke, these lines were not opened to traffic in 127.

The falling off on sections Bangkok to Ban Phaji, Ban Phaji to Korat, and Bangkok Noi to Petchaburi is probably accountable to depression of trade and general conditions of the business in the year under report, while the remarkable decrease on the Petriu line, attributes partly to the reason of competitive struggle of motor-boat traffic, in the canals to the north of the line, tapping thickly populated districts.

Other Coaching Traffic.—Luggage brought in Tcs. 2,079 more than in 127, and special trains and sundries Tcs. 66,989 less. The difference in the last item is due to the extraordinary military movements in 127.

Goods and Live Stock.—There were carried by the railways last year 106,350 tons of Paddy (an increase of 33,999 tons), 47,792 tons of Stone, 17,571 tons of Timber, 15,726 tons of Merchandise, 4,614 tons of Firewood, 4,476 tons of Salt, 2,976 tons of Kerosine Oil, 2,293 tons of Fish, 1,990 tons of Hides and Horns, 1,802 tons of rice, 1,537 tons of Iron 1,427 tons of cloth and clothes 1,019 tons of Liquor, 1,002 tons of Lime, 468 tons of Stick Lac and Gam Benjamin, 818 tons of Cement, 342 tons of Cotton, 225 tons of Coins, etc., etc. Including 3,921 tons of railway construction goods the total was 250,471 tons, and the receipts Tcs. 1,326,010. In addition there were carried 715 heads of horses, 4,286 cattle and 106,844 pigs.

Comparing the results of goods traffic (without regard to railway construction goods) with those of the previous year, an increase of 54,466 tons with an increase in receipts of Ticals 24,0643 is to be noted. Whereas the increase in tons amounts to 28 per cent the increase in receipts shows onlp 22 per cent due to the reduction in rates, which were enforced on and after the 15th January, 1910. From the above percentage of increase, paddy alone takes 17 per cent from the quantity and 13 per cent from the receipts.

Also for the goods rates the basis of sliding scale has been adopted and the reduction varies between 10 to 20 and more per cent, not throughout, but according to seasonal and economical conditions of the country. The new rates bid fair to be a success so far that certain commodities are transported now in much larger quantity than formerly and the receipts in goods traffic since the introduction of the new rates (7 months since) have increased by 5½ per cent in spite of the reduction.

New Works.—During the year under report 748,855 Ticals were expended under this head The River line was completed.

Extension, station yard Bangkok.—The new station hall near Hua Lampong bridge will be erected in year 129. New Workshop has already been in occupation affording extensive facilities all round. Vacuum Brakes have been installed on most of the carriages offering better security to traffic. Though not directly pertaining to this head, I may be allowed to mention that introduction of bogie carriages on long journeys on standard gauge lines has been looked upon as an improvement as they afford more comfortable traveling.

Riverline and Riverstation.—The steady increase of the goods traffic of the Korat and Northern lines made it advisable to provide in time for a new outlet of the traffic at Bangkok, the Klong Kutmai hardly affording sufficient place in the busy time of the year. It was therefore decided to provide for a new goods-station at the Menam Chow Phya some miles down the stream near Klong Thoy. A Royal Proclamation was issued on the 11th December 1905 granting to the Royal Railway Department the right of expropriating the land required for the construction of a branch line from Mackasan to the River and for a goods-station stretching along the river to an extent of 1100 m. and a width of 300 m. Works were commenced immediately after the Royal Proclamation having been issued and on the 15th February, 1910 the station was opened to traffic.

Expropriation.—The whole land expropriated with an area of 150806 square wahs was purchased for Tcs. 221,431=Tcs. 1.46 per square wah. Special difficulty was met with in acquiring the land at riversite and lengthy arbitrations had to be gone through. An old Wat had to be shifted at an expense of 16,548 Tcs.

Earthwork.—The total of earthwork amounts to 67607 cbm for the branchline and 146106 cbm for the station=214413 cbm in all at a cost of 164799=Tcs. 0.76 per cbm. The earthwork includes the excavation of a klong on station ground of 1200 m. length 30 m. topwidth and 4.5 m. depth at high flood.

Bridges.—The branchline to the Riverstation is crossing 3 navigable klongs. Total cost of bridges amounts to 52040 Tcs.

Permanent way.—The permanent way is of the type of the Korat and Northern lines. Sleepers were cut in the Korat district and the ballast brought from the Railway quarries at Pak-Preo and Chongkeh. Including the Station-yard 10.2 km. tracks have been laid.

Stationyard.—Both the banks of the klong above referred to have been provided with double tracks. Besides a crane of 10 tons capacity and a landing for ordinary boats have been erected. The station-building together with office and quarters for the station-master and a shelter for customers has been constructed of Mai Teng Rang wood and covered with corrugated iron.

Extraordinary works.—At km. 3.7 the line is crossing the Paknam Railway. This necessitated preventive measures against collisions by establishing signal installation which was specially designed for this purpose. Besides the Paknam Railway had to be raised over 1 m. at this spot.

Total cost.—The total cost of the construction of the Riverline and Riverstation amounts to 614150 Tcs.

Prospects.—Though the traffic on the new station for the present is only slight it can hardly be doubted that in the course of time the station will play an important role in transhipment of goods between Railway and sea going vessels For this reason the station-ground has been laid out to meet all future eventualities. This seemed the more advisable as the steady increase of landprices along the river would have made it at later times difficult if not prohibitive to extend the station.

The place has been chosen on the deep water side of the river to facilitate later on the construction of wharves for seavessels. On the other hand the strong current of the Menam on this side affects heavily the bank, which is being gradually washed away and costly protections of the bank have therefore to be faced in future.

Mr. Ker believes that in spite of all obstacles the program of railway building in China will be carried out.

EAST COAST RAILWAY OPENED.—The new section from Bahru Bahau to Triang River, covering a distance of 32 miles, was announced ready for opening the first of the month. This branch taps Pahang at Triang. It is expected that this line will reach Semantan by the Spring of next year.

SOUTH MANCHURIA RAILWAY.—This company has completed arrangements to increase its service to four trains weekly to and from Dairen to Changchun. It is also announced that the South Manchuria and the Kirin-Changchun line have arranged a working agreement at Kuanchangtze.

SUPPLY OF INDIAN RAILWAY MATERIAL.—According to *Railways*, Messrs. J. Brown and Company, Limited, Sheffield, have supplied a quantity of helical laminated and volute springs for rolling stock to the Assam Bengal Railway, and the Patent Foundry and Axlebox Company, Limited, axleboxes. Messrs. Brown Bayley's Steel Works, Limited, Sheffield, had an order from this Railway for the supply of steel tyres for wagon stock; and the Isca Foundry and Engineering Company, Limited, Newport, Monmouthshire, a large contract for the supply of points and crossings. Messrs. Taylor Brothers and Company, Limited, Sheffield, were manufacturing 20 steel axles and 10 steel tyres for locomotive engines for the East Indian Railway and Messrs. Cammell, Laird and Company, Limited, Victoria Street, London, Proprietors of the Cyclops Steel and Ironworks at Sheffield, have a large order in hand for the supply of helical and volute springs for rolling-stock. The Patent Axlebox and Foundry Company, Limited, have an order for the supply of 300 axleboxes to this Railway. The roofing materials ordered from England for the circular engine shed at the Madura junction station, South Indian Railway, is under supply by Messrs. Braithwaite and Kirk, Limited, Structural Engineers. A pillar water crane is under supply by Messrs. Blakeborough and Son, Limited, and a turntable for locomotive engines by the Horschay Company, Limited, for the same Railway. Messrs. J. Stone and Company, Limited, London, are supplying 26 of their dynamos and 26 switches for the electric lighting of passenger trains on the South India Railway together with 875 "Tonum" cells accumulators. The Wardle Engineering Company, Limited, also had an order from this railway for the supply of electric light materials; and Messrs. Seimens Brothers and Company's Dynamo Works, Ltd., Stafford and Woolwich, for electric lighting cables. The Vulcan Iron Works, Limited, Engineers, etc., Calcutta have the order of the East Indian Railway Company for the supply of the necessary steel and woodwork required for 14 spans of footpaths, each 65 feet 5 inches long, together with brackets, runners, plank, handrailings, etc. for the 60 feet span girder bridges which are under construction on the Hooghly Katwa Branch across the Saraswati, Kunti and Kharri rivers. Messrs. Burn and Company, Limited, Howrah have the order of the East Indian Railway for the supply of the galvanized iron and steel work required for the roofing over the first floor of the new Junior Hill School ("Oak Grove at Mussoorie; also for a portion of the ground floor, including trusses, purlins, gutters, wind ties, wire netting, etc. Messrs. Heatly and Greshham, Limited, had the order of the East Indian Railway for the supply of a steam self-propelling Crane with double chain, to lift 5 tons at a maximum radius of not less than 15 feet, which was urgently required by their Engineering Department. The Leeds Forge Company, Limited, England, are manufacturing and will shortly ship 75 broad-gauge steel wagons for the transport of Coal for the Bengal-Nagpur Railway. Messrs. Stable Ford and Company, Limited, are supplying ten goods brakevans for the same Railway 2 feet 6 inch gauge extensions and the Gloucester Railway Carriage and Wagon Company, Limited, 14 broad-gauge railway wagons. The Consolidated Brake and Engineering Company, Limited, London, E. C., have supplied 200 sets of vacuum brake gear for rolling stock to the Burma Railways. Messrs. Willford and Company, Limited, have an order from the same railway for the supply of 500 helical springs for rolling stock. Messrs. The British Insulated and Helsby Cables, Limited, Prescot, Lancashire, had a large contract for the supply of telegraph materials to this line. The Vulcan Foundry Company, Limited, locomotive manufacturers, have a large order in hand for the supply of "spares" or duplicate parts for locomotive engines to the East Indian Railway. Messrs. Taylor Brothers and Company, Limited, Sheffield, are supplying 60 steel tyres and 16 steel crank axles for locomotive engines to this Railway and Messrs. Owen and Dyson, Limited, 60 pairs of wheels and axles for vehicle stock and 200 spare wheel centres. Messrs. Greenwood and Battley, Leeds, are supplying the Loco and Carriage and Wagon Department of the South Indian Railway with a bolt and rivet forging machine. The Horsley Company, Limited, Tipton, Staffordshire, have the order of the East Indian Railway for the supply of 9 spans of steel girders for the Kiul bridge and 4 spans for the Hulluhur bridge, which are being renewed. Messrs. Gillanders, Arbuthnot and Company have an order for the supply of 2,000 tons of best selected Burma teak squares, first quality, to the North-Western State Railway. The Tees Side Bridge and Engineering Works, Limited, have the order of the East Indian Railway for the supply of the girders required for the second track over Tonse Bridge near Meja Road Station.

SINGAPORE GOVERNMENT RAILWAY.—The following excerpts are taken from the report of the Acting Manager and Chief Engineer, Mr. W. J. Haskins:

The result of the year's working shows an increase in the gross revenue of $38,845.64, compared with the year 1908. There has been a steady increase in passenger traffic, 463,804 passengers being carried during the year, which is 26,382 more than during the year 1908.

2. The receipts on account of goods nearly doubled during the year.

3. The capital cost of the Railway up to 31st December, 1909, amounted to $4,565,967.57. The net earnings for the year were $68,144.14 equal to a dividend of 1.49 per cent.

4. The total revenue amounted to $233,792.34.

5. The working expenses during the year amounted to $165,648.20, as compared with $174,512.26 during 1908.

6. In July, 1909, through traffic with the Johore State and Federated Malay States Railways was commenced and the total amount earned on this account by this Railway up to 31st December, 1909, was $6,573.33.

7. *Waggon Ferry Johore Straits.*—This was opened to traffic on 24th December, 1909.

8. *Relaying.*—Six and three-quarter miles of permanent way were relaid with 80-lb. rails. Several low embankments were raised, nine level crossings and six girder bridges were also relaid.

9. The alignment between the 13th and 14th mile was corrected by straightening the road and so eliminating a short curve.

10. *Engine and Carriage Sheds.*—All the necessary brick work on the engine shed was completed, and the steel roof principals supplied by the Crown Agents were erected. Fuel stage and water column were also erected and foundations for the carriage shed completed.

FRENCH INDO CHINE RAILWAYS.—The following is gathered from the report of the Minister for the Colonies:

The whole of the line from Laokai to Yunnansen, a distance of nearly 300 miles, was opened to traffic quite recently. The Haiphong line, of which it is an extension, showed last year an increase of about £30,000 in receipts, as compared with the returns of the year before. In the case of the line from Saigon to Khanh Hon and Lang Bian, the section from kilometre 132 Phanrang will be opened on July 1, 1911, and the section from Phanrang to Nhatrang at the end of that year. The section from Phanrang to Xomgon will also be completed at the end of next year. The earning of this system, which will ultimately comprise about 250 miles of railways, showed an increase of nearly £3,000 last year. The returns from Hanoi, Ninh Binh and Vanh coastal line showed a decrease of nearly

PHILIPPINE MINING NEWS

THE PARACALE CONSOLIDATED MINING CO.—The owners of approximately fifty placer and lode claims in the Mambulao and Paracale Districts have consolidated their interests and incorporated with a captial of ₱1,000,000 divided into 500,000 shares of ₱2 each. The owners receive 300,000 shares of the stock and have donated 100,000 shares from their holdings for promotion work. Of these 25,000 have been placed on the market at ₱.50 and have been largely subscribed.

Little is known of the lode properties as the work of development is only in the initial stages. Encouraging reports have been received from the placers, but the company is very conservative in its announcement.

Indeed, the main purpose of the consolidation is to make a thorough test of all the properties before proceeding to active development. The initial subscription of promotion stock at ₱.50 was most satisfactory and testing operations are already under way.

PERSONAL.—George I. Adams, formerly of the Philippine Mining Bureau, returned to Manila recently after concluding an examination of the Timor Oil Exploration Company.

General Manager Bridgeman, of the Philippine Exploration Company, is expected to return to the Philippines from New York by the end of the month.

Ex-Governor Whitmarsh of Baguio, one of the pioneer mining men of Benguet, sailed this month accompanied by his family to Europe.

Mr. M. A. Clarke, president of the Benguet Consolidated, also sailed this month for Europe.

THE MAJOR GROOP.—Development work on this property, situated in Benguet, preparatory to the installation of a three-stamp mill has been progressing rapidly.

THE BENGUET CONSOLIDATED.—This company has been sadly crippled as a result of the serious storm in the mountain region which carried off its well equipped cyanide plant. The mill has been engaged in cleaning up the dump and the results have averaged from 80 to 100 ounces monthly. We have been informed, however, that arrangements have been made for the installation of a new cyanide plant to be completed in about six months.

THE PHILIPPINE EXPLORATION CO.—The San Mauricio mine began operating twenty stamps, September 7, and ran irregularly up to the end of the month, making 18 days full time. The result was 130 ounces of gold from the plates. Besides this, twenty tons of concentrates running in value from $50 to $80, U. S. C., per ton were shipped to the Tacoma Smelting Company. The mill has been running steadily during the month and it is expected that the output will average about 200 ounces with from 75 to 100 tons of concentrates monthly. Another shipment of 75 tons of concentrates will be made on November 12.

The Exploration Company has a prospecting party engaged in active operations on the Robinson group.

GOVERNMENT CEMENT FACTORY.—The Washington correspondent of the Manila *Cablenews-American* states that the War Department is considering the installation of a large cement manufacturing plant in the Philippines. The Government imported 84,000 barrels of cement last year and it is believed that the investment would be warranted by a general saving in cost.

THE EAST BATAN COAL COMPANY.—This company has added two coal cutters to its equipment. They were installed early this month and will increase the output by 300 tons daily, each having a capacity of 150 tons of coal every 24 hours. They were secured from Messrs. Ingersoll Rand & Co. of New York City. Two additional machines are on the way.

HEADQUARTERS MINING CO.—This company expects to be in a position by March, 1911, to begin operations with its battery of ten stamps. The machinery and equipment, including a Ridgeway filter tube mill, etc., are now being installed. The development work is still progressing and by the date of the beginning of mill operation, sufficient ore will be in sight to keep the plant supplied continuously.

THE NUEVA ECIJA FIELD.—Active interest is reported in this region. The Cabu and the Rio Chica companies are busily engaged in prospecting and reports continue very favorable.

THE MANCAYAN COPPER.—The status of this property remains unchanged, but negotiations are being carried on with interested parties looking to further development.

THE BUA MINING CO.—The Secretary Treasurer's report for the six months ended June 30, 1910, shows a profit of $13,512.15 after writing off ₱5,000 to a fund against overdraft. The mill did not resume operations after the storm of October, 1909, until January and owing to floods was closed down May. The result was 1,600 tons crushed, 1,237.04 ounces recovered by amalgamation, valued at ₱35,609.33, 578.41 ounces cyanide recovery valued at ₱10,566.80 making a total value of ₱46,176.13.

"*Condition of Plant.* All the milling machinery is in good working condition, the fluming "however needs renewing. The cyanide plant "and all its connections, with the exception of "the sumps and zinc boxes destroyed in the "typhoon, is in the best possible state of preservation. The gravity and aerial tramlines are "in good condition and can be used in the construction of the new mill. When the mill "was finally shut down, the cyanide plant and "all machinery below the battery floor was dismantled and put high above any possible "flood levels. Sheds were erected over the "cyanide plant timbers to protect them from "the weather.

"*Milling.* Operations were started on the "1st January, 1910, and continued till the 2nd "May last when the heavy rains made it impossible to continue crushing profitably any "longer. It was then considered advisable to "shut down the mill pending the decision of the "Directors as to the advisability of removing "all machinery to a suitable mill site."

Mr. P. Weedon, the Company's acting Manager, reports in part as follows:

"*Mining.* On the 1st January work was "resumed at the Gomok claim. No drifting "on reefs has been carried on at the top levels "as all work has been confined to stoping the "North and South reefs on these levels. The "average height stoped on the North reef is "45 feet. The average heights stoped on the "South reef is 35 feet; and distance on each reef "is 350 feet. The crosscut tunnel has been extended due South for a distance of 717 feet. "This is the crosscut mentioned in the last "report, the object of which was to cut the North "and South reefs at a depth of 100 feet below "the present working. At 515 feet from the "mouth of the crosscut the North reef was cut, "showing a body of ore 2½ feet wide and panning "about $8 free gold per ton. The reef at this "point is considerably larger and carries better "values than at the same vertical point above. "This is a splendid indication that the reef is "stronger and better as it dips into the more "settled country. From the point where the "crosscut met the North reef, a drive was put "in on the ore in an easterly direction for a distance of 80 feet, and then the lower crosscut "was connected by an upraise with the top "workings. This upraise follows the ore body "all the way and shows the height of ore between "the two levels to be 110 feet. The crosscut "tunnel is well timbered where necessary, but "ground through which the upraise passes was "considered sufficiently hard to stand without "timber. This was the condition of the mine "after the typhoon in May 1910, and all men "were discharged. Since the completion of the "upraise no work has been done in the mine."

£10,000, owing to the floods. Work on the projected line from Mytho to Kantho has not yet been begun.

THE MINDANAO MILITARY RAILWAY.—With the appointment of General Wood to the post of Chief of Staff, interest in the Overton-Keithly line which has been mooted for years is revived, and there are prospects of an appropriation being secured next session of congress. General Wood while governor of the Moro province was strongly in favor of the enterprise and now that he is in a position to secure a better hearing it is expected that the matter will receive more attention. The survey of the line covering a distance of 24 miles was made some years ago and will cost approximately $400,000. Besides serving to carry military stores and supplies economically this line would open up a large tract of fertile country.

TAOTAI JEME TIEN YU'S APPOINTMENT.—The most important news of the month is the acceptance by Taotai Jeme Tien Yu, the successful railway engineer who was responsible for the completion of the Peking-Kalgan line, of the position of Director General of the Canton-Hankow line. He will not proceed to this post until he has completed the plans for the construction of the proposed Szechuan-Tibet line. It appears that Taotai Jeme accepted the position only after he had been guaranteed that all the shares of the companies interested were paid up and the proceeds deposited in responsible banks; that he would have a free hand to direct the work and employ assistants and labor, and that he would not be subjected to any criticism until he had completed the line. It is understood that these terms were complied with. It is believed that this appointment solves all problems connected with this line. In some quarters it is intimated that his appointment will do away with the necessity of floating the proposed foreign loan.

THE CHEKIANG RAILWAY TROUBLE.—The dismissal of Director General Tang Shan-chien has served to create an unusual situation in which there is serious friction between the merchants and the Board of Communications. From reports, it is the purpose of the Board to take over control of the railway. The latter part of September a meeting of the shareholders was held at which it was decided:

(1) That Mr. Liu Cheng-lo be invited to be Director-General of the Chekiang Railway vice Mr. Tang Shau-chien.

(2) That the shareholders be pressed to pay up the calls on their shares.

(3) That the authorities be asked to announce whether or not they have abolished the people's right to elect directors of the companies under their management.

All efforts to secure the reinstatement of President Tang proved abortive and the general sentiment expressed by the shareholders denounced the Government for interfering in the management of the line. However, the Peking authorities have been firm. It is reported that the Provincial Assembly suspended its session for the reason that the governor refused to have the subject of again addressing the throne reopened.

JAPANESE RAILWAY CHIEF HONORED.—The Czar has conferred the Order of St. Anne upon Vice-President Hirai of the Japanese Railway Board.

THE CENTRAL RAILWAY LOAN.—Conflicting reports are received as to the progress made towards the consummation of this agreement, but it would appear that the conclusion of the agreement is as far away as ever. A dispatch from Peking, October 4th, was to the effect that the representatives of the four foreign Syndicates and the Yuch'uanpu have held a conference in regard to the Canton-Hankow Railway Loan. H. E. Sheng Kungpao, Vice President of the Ministry of Posts and Communications, criticized the terms offered and would not agree to take up the loan, urging the promise to the gentry not to employ foreign capital.

Previously a Peking dispatch stated that the Acting President had advised the foreign representatives that the matter would not be taken up until President Tang Shou-yi's return. So far no new information is available.

over 200 tons daily would be the output during this year and that the company had proved up 20,000,000 tons on their holdings.

THE PEKING SYNDICATE.—With the return of the force of colliers after the local harvests, the output of these mines is represented by 1,200 tons of coal daily. The output for July reached 23,000 tons and sales 17,500 tons.

KRUPPS MAY INVADE CHINA.—A London report is to the effect that in view of the large ordnance orders soon to be placed by the Chinese Government and the increased activity in this line of development in the Far East, the firm of Krupps is endeavoring to secure a site for the establishment of a plant in China.

THE EASTERN SMELTING COMPANY.—The report for the half year shows larger and more satisfactory returns than ever the previous corresponding term. A dividend of 4% was declared and $20,000 carried forward.

NEW DREDGER FOR THE TONGKAH COMPOUND TIN DREDGING COMPANY.—An order has been placed by this company in Australia for a tin dredger designed to work at a depth of the 35 feet below water level, the dimensions of the hull to be 120 feet in length, 40 foot beam and a depth of 7.5 feet. The price named is £18,000. The dredge will be utilized on the company's concession, Tongkah Harbor, Siam.

F. M. S. TIN EXPORT.—The Mines office has issued a statement of the exports for the first eight months of the year as follows:

The figures for Perak, Selangor and Negri Sembilan respectively are as follows:—

Tin. Pikuls.	Tin Ore. Pikuls.	Total. Pikuls.	Duty. $ c.
66,304.44	218.853.71	285,158.15	2,742,916.47
28,621.33	134,495.41	163,116.74	1,598,097.33
85.87	23,809.98	23.895.85	234,148.08

The figures for the corresponding period of 1909 were:—

Tin Pikuls.	Tin Ore. Pikuls.	Total. Pikuls.	Duty. $ c.
71,535.17	223,611.78	295,146.95	2,548,219.59
30,095.54	143,316.66	173,412.20	1,499,743.07
4,264.83	27,458.00	31,722.83	273,208.72

BELAT TIN MINING COMPANY, LTD.—At a recent meeting of this company a dividend of 20%was declared making 30% for the year.

GOLD AND TIN IN KELANTAN.—The report for 1909 states that the Duff Development Company worked four dredges in the Galas River and won 8,507 ounces during the year. Another dredge is now working on the Nenggiri River where the company has a concession covering seven miles of the river. The output tin for the year amounted in all to 69 piculs.

OIL WAR IN SINGAPORE.—A war in the price of oil was inaugurated between the Standard Oil and the Asiatic Petroleum Company upon the conclusion of their agreement a month ago. There has been a drop of 40% in the price and the latest advices from Singapore are to the effect that Standard Arrow brand was quoted at $1.00 Straits Cur. a case of eight gallons while the Asiatic Dragon was quoted at the same price. These brands were formerly quoted at $1.70 and 1.53 respectively.

NEW TIN MINING SYNDICATE.—The formation of a company to exploit tin lands near Batu is proposed as a result of the tests made by the Kepong Syndicate, Ltd., on over 30 acres of tin bearing land. The capital of the company is reported to be £150,000. The total area involved is 227 acres.

HANGYANG IRON WORKS SECURES LARGE RAIL CONTRACT.—The contract for the supply of 6,000 tons of steel rails to the Northern Section of the Tientsin-Pukow Railway has been secured by the Hangyang Iron Works. The price is reported to be Tls. 50 a ton.

NEW ALLOY DISCOVERED.—Messrs. Vickers, Sons and Maxim have placed a new alloy on the market known as Duralumin which is reported to be slightly heavier than aluminum and as strong as steel. The new metal may be rolled, stamped, extended or forged at suitable temperatures.

MINING IN INDO-CHINE.—A bulletin issued by the Governor General directs attention to the undeveloped mineral wealth of the country and urges greater activity in developing the coal measures of Hongay. The zinc mines of Trang-da, Lang-Hit and the Thang-Moi produced 40,000 tons of zinc last year and lead and copper deposits have been uncovered at Caobang.

F. M. S. TIN RETURNS FOR AUGUST.—The returns show a total output of 13,741 piculs.

THE RAUB AUSTRALIAN GOLD MINING CO., LTD.—For the four weeks ended August 13, 3,993 tons of ore were crushed and 802.23 oz. of gold recovered.

FINANCIAL, COMMERCIAL AND MISCELLANEOUS NEWS

THE NETHERLANDS INDIA BUDGET.—The total estimates for 1911 show a total revenue of florins 212,588,075 as against an expenditure of florins 230,738,102.

PRODUCTS OF JAVA.—The annual report of the Java Bank contains some interesting figures concerning the principal agricultural products of Java. The production of sugar, for instance, has been very favorable during 1909, as 180 factories produced 20,208,000 piculs (Javan picul = 136 pounds), which is about 140,000 piculs more than in 1908. This quantity changed hands at an average price of 6.60 florins (florin = 40½ cents) for Muscovados. The Deli tobacco crop yielded 271,350 bales, being about 1,000 bales less than a year ago. The average price per half kilo (1¼ pounds) was 1.10 florins, against 0.91 of a florin, and the total value of the crop has been fixed at 46,600,000 florins, or nearly 8,000,000 florins more. The crop of Java tobacco was disappointing, 506,013 bales being exported, or a decrease of 110,000 bales. The proceeds were only 25,740,000 florins, against 32,400,000 florins in 1908. The cultivation of tea is also constantly advancing, so that in 1909 20,176,376 kilos were exported from Java against 15,979,269 kilos in 1908. This culture will be still more largely extended, foreign capitalists also being interested. Of copra, 129,089 tons, at a value of 25,600,000 florins, have been shipped from Netherlands East India.

CHINA'S BUDGET.—The estimates prepared by the Ministry of Finance include a total expenditure of Tls. 333,502,300 while the revenue is estimated at Tls. 297,501,700, a deficit of Tls. 36,006,600.

CHINESE BONDS.—A Reuter dispatch from London is to the effect that Chinese bonds for the amount of £450,000 being 7% interest were issued in London on the 26th. On Saturday last they were quoted at a premium of from £1 to £2; the present quotatation is £108. The amount is to be appropriated for the redemption of the Peking-Hankow railway bonds.

PHILIPPINE SUGAR.—The reports from Panay and Negros are to the effect that production for 1910-11 will reach 2,096,000 piculs, an increase over last year of about 48 per cent.

MANILA REVENUE.—During the first quarter of the fiscal year ended September 30th the total collections from all sources amounted to ₱442,050.35, an increase of ₱15,112 over the returns for the corresponding quarter last year.

GOLD YEN NOTES FOR MANCHURIA.—The *Manchuria Daily News* states that yen 1,000,000 of newly issued yen 5 gold notes were received last month by the Dairen Branch of the Yokohama Specie Bank in exchange for the old notes.

WILD COCOON SILK REELING STATION AT ANTUNG.—It is proposed by several Japanese capitalists to incorporate a company with a capital of yen 500,000 for the purpose of operating 100 reels at this point in view of the quantity of wild cocoons available in that region.

SOME RUBBER DIVIDENDS.—The *Malay Mail*, commenting on enviable dividend-producing companies, says:

"The Tremelbye dividend announced today brings another F. M. S. rubber company into the list of dividend-paying concerns. This Company has an authorized capital of £75,000, and an issued capital of £52,552, consisting of 46,552 fully-paid £1 shares and 12,000 £1 shares issued last year and now ten shillings paid. The Company's estates, comprising 2,186 acres in all, are Tremelbye, Ebor, and Sungei Nebong. There are 1,545 acres planted, including 1,002 acres over 2½ years old, 249 acres over 3½ years old and 108 acres over 5½ years old. There are, approximately, 228,370 trees. The crop for the year ended June 30th was 22,118 lb., and, as the output for July and August alone is more than half this total, it is evident that this year's crop will very largely exceed last year's. The prospects of the Company appear very bright.

"The Cicely Company is one of the lowest capitalised concerns in the country—£16,000—and its dividend record makes a pretty picture. It has declared the following dividends to date:

	Pref.	Ord
1905-6	10	5
1906-7	20	15
1907-8	42½	37½
1908-9	55	50
1909-10	140	135
1910-11	51¼	50 (int.)
	318¾	292½

"It would appear from the amount of the interim dividend on the preference shares that the directors contemplate paying further dividends for the current financial year of 153¾ on the preference and 150 on the ordinary shares

SIBERIA COLONIZING SCHEME.—It is estimated that the Russian Government will expend Roubles 2,500,000 in encouraging emigration to Siberia this year. Over 13,000,000 acres are to be surveyed into 40 acre plots and each adult is entitled to acquire one plot. Besides money will be advanced to aid the colonists and it is estimated that over 500,000 persons will be transported to the new territory.

PHILIPPINE SUGAR BONDS PROPOSED —Governor General Forbes has recommended that the legislature provide a fund for the purchase of bonds issued by sugar companies composed of hacienda owners, the capital to be utilized in installing sugar centrals in the Philippine sugar districts

HONGKONG-MANILA PARCEL POST.—The Hon C. B. Elliott, Secretary of Commerce and Police, and the Postmaster General of Hongkong recently concluded negotiations for the opening of a direct parcel post service between the two cities. The maximum size of parcels will be 3 feet 6 in. in length and the maximum weight 11 pounds, including all classes of merchandise. The rate will be 35 centavos per pound or fraction. An extra sum of ten centavos in Manila and 15 centavos in Hongkong will be charged for delivery to street address. Conventions of a similar nature are proposed with other colonies and the islands and direct money order exchange is being considered.

China, Manchuria, Japan, Indo-China, Siam, Straits Settlements, Malay States, Burma, India, Malaysia, and the Philippines

THE FAR EASTERN REVIEW

VOL. VII.—No. 6. MANILA, SHANGHAI AND YOKOHAMA, NOVEMBER, 1910. 50 Centavos Philippine Currency 25 Cents. U. S. C.

VISIT OF THE AMERICAN COMMERCIAL COMMISSION

Reception Held at the Residence of Taotai Chow Ching-seng, Shanghai, in Honor of the Honorary Commissioners from the Associated Chambers of Commerce of the Pacific Coast

ENGINEERING COMMERCE & FINANCE

CONTRACTING NEWS

CONTRACTS AWARDED—Municipality of Shanghai.—Electric Cables and Fuse Boxes:—

11 miles Hard Drawn Bare Copper Cable, manufactured by the Felten and Guilleaume Lahmeyerwerke in accordance with the specification, Messrs. Siemssen & Co., at £75 5s. per ton copper weight, say (£946 5s. 3d.), delivery within 13 14 weeks after receipt of order. The remaining tenders are as follows:

	£	s.	d.
Inniss & Riddle	924	16	10
Jardine, Matheson & Co. Ld.	950	0	0
Takata & Co.	960	2	7
British Insulated Cables Co.	972	5	0
Calder Marshall & Co.	985	10	0
Brighten, Malcolm & Co	985	10	9
Garrels, Borner & Co.	986	11	8
Siemens Schuckertwerke	991	0	0
Arnhold, Karberg & Co.	994	0	0
Melchers & Co.	999	16	0
Calder Marshall & Co.	1006	0	0
do.	1018	10	0
Johnson and Phillips.	1027	0	0
Shanghai Machine Co.	1031	6	8
Shewan, Tomes & Co.	1063	7	2
Inniss & Riddle	1080	0	0
Collins & Co.	1093	10	0
Rose, Down & Thompson	1125	19	5
W. T. Henley's Telegraph Cable Works	1134	11	6
Cleveland Engineering Co	1169	16	8
Craig & Co.	1230	12	0
P. Muller	1452	0	0

1,000 single-pole, 50 Ampere, 200 Volt, House Service Fuse-boxes, manufactured by the W. T. Henley's Telegraph Cable Works in accordance with the specification, Mr. David W. Bell, at 4s. 10d. per set (say £120 16s. 8d.), delivery within 14 weeks from date of receiving order. An identical tender has been received from the W. T. Henley's Telegraph Cable Works direct, but acceptance of the local tender is considered preferable.

The remaining tenders are as follows:—

	£.	s.	d.
W. Lucy & Co. (f. o. b.)	89	11	8
Johnson & Phillips	101	0	0
W. Lucy & Co. (f. o. b.)	106	5	0
Collins & Co	107	10	0
Takata & Co.	108	7	10
Jardine, Matheson & Co. Ld.	119	0	0
Cleveland Engineering Co.	120	0	0
Rose, Down & Thompson	134	7	6
Shewan, Tomes & Co.	140	0	0
Inniss & Riddle	165	0	0
Rose, Down & Thompson	165	2	1
Brighten, Malcolm & Co	170	0	0
do.	170	0	0
Inniss & Riddle	172	0	0
Brighten, Malcolm & Co.	196	17	6
British Insulated Cable Co.	204	0	0
Cleveland Engineering Co.	210	0	0
Inniss & Riddle	256	0	0
Calder Marshall & Co.	394	5	0
do.	498	15	0
Siemens Schuckertwerke	505	0	0
Siemssen & Co.	510	0	0
Garrels, Borner & Co.	517	10	0
Arnhold, Karberg & Co.	790	0	0
Melchers & Co.	1031	17	0

Seward Road Bridge.—Tenders received for the erection and completion of the reinforced concrete substructure of the Seward Road Bridge across the Hongkew Creek, that of Yao Sing-kee, Tls. 4,059.06 was authorized for acceptance. The remaining tenderers are as follows:—

Yue Chang-tai	Tls. 5,321
Silby and Evans.	5,400
Fong Ling-kee	5,854
Chang Fou-kee	9,150
Zee Zung-tai	9,222
Sing Woo-kee.	12,250

Installation of fire service in the Gordon Road Depot and extension of Hot Water Heating apparatus in the new greenhouse at the Reserve Garden awarded the Shanghai Waterworks Co., Ld., Tls. 820 and Tls. 540 respectively. Erection of new kitchen, etc., at Louza Police Station, Zee Shun Shing, Tls. 1,200, were awarded the contracts.

BIDS OPENED.—Bureau of Public Works, Philippine Islands.—Furniture and Equipment, Philippine General Hospital.—S. C. Choy & Co., ₱10,870, in 140 days, and Manila Saw Mill Company ₱5,931 in 180 days.

BIDS OPENED.—Bureau of Public Works.—Cebu Waterworks.—J. E. Ainsworth bid on A. B. C. as follows: A, construction of dam and spillway, ₱148,060. B, construction of reservoir, ₱63,850; and C, construction of distributing system, ₱99,651, or a total of ₱311,561. The Manila Construction Company bid as follows: A. ₱142,650, B. ₱76,450, C. ₱106,095 or a total of ₱325.195.

Coleman & Goodman: A. ₱133,010, B. ₱78.150, C. ₱108,142 or a total of ₱318,302. Their offer called for an award on all three or none.

The Atlantic Gulf & Pacific Co. bid on A. B. C. and D., the last named representing the delivery and purchase of the material for the distributing system and main pipe line. They bid on A. ₱144.385, B. ₱73,457.50 C. ₱90,247.90, or a total of ₱308,090 40, on D, they bid ₱155.537.50 which makes a grand total on the work and supplies of ₱463,627.90. The A G & P. Co. bid on A. B. C. and D, collectively, and on A. B. C. separately. They specified that they would accept D. separately with a 5% increase.

Robert M. Loper bid A ₱121,380, B ₱82.410, C. ₱111,372, or a total of ₱315,162, D. ₱170,-058.14 or a grand total of ₱486,058.14. Mr. Loper's bid called for A. B. C. collectively or one.

A. Moll & Co. bid on supplying materials only. Their bid was for D. ₱159,866.11, duty paid. The "duty paid" is not clear, but it is presumed to mean that they will pay the duty on the goods that they submit.

Messrs. Peabody & Co. bid on D. only, ₱154,427.36 for English material and ₱155,-805.25 for American. The English bid omitted 96 post fire hydrants. They also specified that should the work be awarded to the Manila Construction Company they would reduce the price ₱1.75 per ton on both bids.

Messrs. Findlay & Co., bidding for Robert McClarien & Co., bid ₱157,481 86 on D. providing all pipe and specials could be delivered in one lot instead of two, and that they be allowed to furnish class A fire hydrants.

The Atlantic Gulf & Pacific Co. are the lowest bidders for all the work and are also the lowest bidders for A, B, and C, but they are not the lowest bidders on D, if taken separately. All the bids have been taken under advisement by the Director of Public Works.

PROPOSALS INVITED.—Tientsin-Pukow Railway (Southern Section). Third Class Passenger Cars. Sealed tenders are invited for the supply to this Railway of twelve (12) third class passenger cars. Specification and Blue Prints of same may be obtained from the Railway Purchasing Agent, Taotai Y. C. Tong, Imperial Chinese Telegraphs, The Bund, Shanghai, on the payment of a fee of Dollars Twenty-five ($25.00) which amount will be returned, upon application to the Agent, on receipt of a bona-fide tender.

Tenders should be addressed to the Managing Director, Tientsin-Pukow Railway, Southern Section, Nanking, and should be clearly marked on the outside "Tender for Twelve Third Class Passenger Cars, Indent No. 104." They will be opened at the Head Office, Nanking, at 10 a. m., 1st December, 1910. No tenders submitted after the hour mentioned will be considered.

Tenderers are requested to carefully note the following conditions: All the Cars must be delivered "ex ship's slings" on the Railway Wharf at Pukow at Contractor's risk and cost, before end of June, 1911. A fine of Five Shillings per car per day will be deducted from the contract price as liquidated damages for each day car or any part of it remains undelivered after the date mentioned. Customs Duty and Wharfage Dues at Pukow for Railway account, all other charges for Contractor's account.

Quotations must be in Sterling and the names of proposed makers must be stated. Payment will be made Twenty (20) days after complete acceptance of each shipment, in Shanghai or London at Contractor's option.

CONSTABULARY CLOTHING SUPPLIES.—Sealed proposals in triplicate, subject to the usual conditions, will be received at the office of the Chief Supply Officer Bureau of Constabulary, Old Oriente Building, Manila, until ten a. m., December 17, 1910, and then opened in the presence of attending bidders for furnishing the Bureau of Constabulary the following articles:

6,000 khaki hats.
24,000 cotton undershirts.
7,500 spiral-cut khaki woolen puttees for enlisted men.
50.000 yards of khaki cloth.

Bids must be accompanied by samples.

Time for delivery to be stated in proposal and to be considered in awarding contract.

Samples may be seen and blank proposals obtained at the office of the Property Officer, Bureau of Constabulary, Old Oriente Building, Manila.

As a guarantee of good faith each proposal must be accompanied by a certified check for ten per cent of bid. Letter of guarantee from bank will be accepted in place of check.

"A few possibilities for improvement are suggested, the chief among them being the substitution of modern methods of manufacture. It is shown that the average planter could by selling his cane to a central factory earn a somewhat larger profit from it than by manufacturing it into sugar himself under the present method, the difference in profit being much more marked with inferior than with very rich and pure cane. The greatest benefit to the planter under the modern system would result from his being thereby rendered independent of manufacturing details and largely of weather conditions, so that he would be enabled to operate on a much smaller working capital and at the same time secure better results from his land.

"The annual limits of sugar production in Negros during the next fifteen years may be estimated at about 220,000 metric tons of low-grade sugar under the present system of manufacture or 500,000 metric tons of 96° centrifugal sugar if a complete change should be made to modern methods of manufacture. The larger production under the modern system would be due not so much to a greatly increased yield as to the stimulus to the industry in general and consequent improvement in cultural methods which would follow in its train."

The illustrations accompanying this article are published by courtesy of the Bureau of Science.

FAR EASTERN RAILWAY NEWS

JAPANESE RAILWAYS.—The total receipts for the five months ended August 31 amounted to Yen 37,271,383, an increase of Yen 1,493,613 over the corresponding period, 1909. The average mileage, including 640 miles in Chosen, was 5,346 miles, 146 miles more than in 1909.

THE PENINSULAR RAILWAY.—The construction of the Siamese end of this line from Petahaburi along the east coast toward the Kelantan border where it will join the line from Singapore is progressing. A branch running west from Tung Sawn to Trang on the west coast is also included in the Siamese railway program. Penang is agitating a link connecting Prai via Kedah and Perlis directly with the Siamese line. The *Bangkok Times* claims that with the completion of the present line to Trang the latter would be Penang's natural port. The *Penang Gazette* claims that the outcome of the present plans means that Penang will be left out in the cold.

AUSTRALIAN RAILWAYS.—The number of miles open to traffic during the year ended June 30, on the New South Wales State system, was 3,643, with 253 miles under construction.

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to instal a twenty stamp mill on the property and that the shareholders turn over 20% of their stock to be placed on the market to cover the expense. The following directors for the newly incorporated company which took over the old partnership interests were: Judge F. B. Ingersoll, Robert Lienau, Eduardo Soriano, Geo. C. Sellner, and Captain Wilson. Geo. C. Sellner was elected president, Judge Ingersoll, vice-president, and Robert Lienau, secretary-treasurer.

THE MAJOR MINES.—This company which has been active in the development of property near Baguio is preparing to instal a hydro-electric generating plant on one of the streams in that locality. It is expected to develop 1500 h. p.

BATAN COAL MINING CO.—President Daniels went to Hongkong the latter part of October for the purpose of purchasing two colliers for his company.

THE NUEVA ECIJA FIELDS.—A movement is on foot among the different owners of property on the Chica to organize a holding company with a view to comprehensive development. The preliminary steps have been taken and the owners of several thousand acres have signified their approval. A survey is now under way.

New Zealand capital is negotiating for several properties in the Nueva Ecija field and we understand that the Cebu company is concluding arrangements for the installation of machinery on its property.

PHILIPPINE OIL.—Prospecting work on the Tayabas oil field continues and a report on the work is expected in a short time.

Prospectors from the vicinity of Sual, a port on the coast of Pangasinan province, report the presence of oil deposits in that vicinity. Their extent is unknown and little testing work has been done.

THE LEPANTO COPPER.—News has just been received from these extensive deposits that on the Chamber's group a large body of ore has been uncovered during the month. These deposits are near the old Spanish mine. Work has been in progress on this group for several years, but persistent effort has been rewarded in a substantial way. This report removes all doubt as to the extent and value of these outlying deposits and further work, we understand, will be expedited.

The interlocking system of signals is being installed and an electro-pneumatic installation was completed at Sydney. This system carried 53,644,271 passengers and there were no accidents or casualties during the year.

The Victoria State Railways have an open line of 3,544 miles including 81 miles added during the year and 124 miles under construction.

BRITISH LOCOMOTIVES FOR THE SHANGHAI-NANKING RAILWAY.—A description of the four locomotives built by Messrs. Kerr, Stuart & Company, Ltd., of Stoke-on-Trent, for this company has been received. The drivers have a diameter of seven feet; the wheels of the bogie are three feet, six inches, and pair of trailers four feet nine inches in diameter. The cylinders are 18 inches, stroke 26; the boilers are 12 feet 10½ in length with a diameter of 4 feet 9½ in., its center line pitched at 9 feet above rail level. Each boiler has 188 tubes of 2¼ in external diameter and a heating surface of 1,650 square feet is provided so as to utilize the coal available. They are fitted with Westinghouse brakes. Among the other auxiliaries provided, are Vacuum Oil company's lubricators, Laycock's steam heater and Holden & Brooke's injectors. The tenders have each 10 ton fuel space and capacity for 3,500 gallons of water. The dead weight of each engine is 50 tons and the tender 19 tons 9 cwt.; working, the total for engine and tender is 98 tons, 14 cwt.

F. M. S RAILWAY SUPPLIES.—The railway bureau has been authorized to expend $152,600 in further equipping the line for the proposed night service between Singapore and Penang. The expenditure will include $106,000 for additional rolling stock, $34,400 for two buffet cars and $12,200 for fitting the coaches with electric light and fans.

PERSONAL

Mr. William B. Poland, chief engineer and general manager of the Philippine Railway Company, sailed from Manila, November 13, for the United States on leave. Mr. Alexander Strausz, jr., auditor for the company, will be in charge as acting general manager during Vice-President Poland's absence.

Mr. A. W. U. Pope, general manager of the Shanghai-Nanking Railway, is enjoying a furlough in England and just before his departure he was the guest of the Chinese Chamber of Commerce at a dinner given in his honor at Mr. Chew's Garden, October 25. He was later presented with a handsome silver bowl by the railway staff and half dozen gold and tortoise shell pieces to support the center piece for Mrs. Pope. A small silver bowl was added as a recuerdo by the members of the Chinese Staff. Taotai Chung Mun Yew, the Director General, made the presentation. Mr. Pope proceeded via the Trans-siberia route.

KOREAN CONSTRUCTION.—The reconstruction of three tunnels, one of which is 400 feet in length, and the repair of a dozen bridges on the Seoul-Wiju line will be completed by the end of the year. Over 30% of the reconstruction program is reported complete.

The Seoul-Gesan survey was completed and construction work begun in September.

The Paju-Chinnampo line, 34 miles in length, was opened for traffic the first of the month.

The construction work on the Honan line was undertaken in September on the section between Taiden and Renzan.

THE FUKIEN RAILWAY.—The company expects to open the line to traffic to the southern bank of North River from Amoy by the Chinese New Year.

ANOTHER SOUTH CHINA LINE.—A project has been under way for some time to construct a railway from Chao-Chowfu via Kit-yang Puning, Hui-lai, Lu-fung, Hai-teng and Tan-Shui to connect with the Kowloon-Canton line at Shen-Chun covering a distance of 600 li. A Chinese company, with a capital of $10,000,000 gold, was organized about a year ago and it is understood interest in the project was recently revived.

WIDENING JAPANESE GAUGE POSTPONED.—The Railway Bureau has decided to postpone the expensive program of widening the gauge to standard for the reason that it would take many more millions than are available for annual expenditure and the country in many sections is sadly in need of new lines and securing better facilities to these districts is of greater importance to the country.

PHILIPPINE GOVERNMENT ARCHITECT'S REPORT.—During the year ended June 30, 1910, this office prepared plans covering 175 projects with an estimated cost of ₱7,310,000. In the development of the Burnham plans for Manila, parking the moat is to be continued between Calle Palacio and Victoria to provide two baseball diamonds, a foot-ball field and six tennis courts.

GOVERNMENT WHARVES, PENANG.—During the year 245 feet extension at the northern end was practically completed and the southern extension is progressing very favorably. When finished there will be a total length of 1200 feet alongside.

DERHAM SHIPPING AND WAREHOUSE CO.—This firm has secured a site for a large warehouse on the new harbor, Manila, and will construct a two-storey building 250 by 100 feet, between the two large piers. The warehouse section is to occupy the first storey and will be divided into chambers for receiving and delivering goods. The second storey will be divided into offices. The building will cost ₱160,000. The plans were designed by the Eastern Engineering Co. and the Manila Construction Co. has the contract. It will be built of reinforced cement and guaranteed fireproof.

KUALA LUMPUR WATERWORKS.—The total estimate for this extension project amounts to $800,000, Straits Cur., of which $140,000 will be spent this year.

LOCOMOTIVES FOR JAPAN.—The Railway Board has authorized the importation of 66 locomotives of German, British and American manufacture during the year. Sixty of these will be for passenger service and six for freight.

WHITE ANTS INVADE JAPAN.—The Railway Board is greatly agitated over the general attack made by white ants on the railway sleepers on the Kyushu line, especially the soft woods. As the result of an investigation it was found that the pest did not thrive in the sunshine.

OBITUARY.—News has been received from New York announcing the sudden death of Sir Clifton Robinson, the well known British railway expert. It is understood that he was in New York to confer with the Speyer interests with a view to extending railway operations in the Philippines.

BANGKOK WATERWORKS CONTRACT.—The contract for the supply of cast iron pipes, joint bolts and rubber rings for joints was awarded the Société Anonyme des Hauts Fourneaux et Fonderies de Pont-à-Mousson, the prices offered were pipes, $32.85 gold per ton; joint bolts, $9,27 per 100 kilos, and rubber rings, $295 per 100 kilos. The other bidders were Macfarlane, Strang & Co., Glasgow, and the Société Métallurgique du Périgord.

FAR EASTERN ENGINEERING, CONSTRUCTION, COMMERCIAL AND FINANCIAL NEWS

ELECTRIC LIGHT, POWER, TELEGRAPHS, TELEPHONES, AIRSHIPS, AUTOMOBILES, ETC.

ELECTRIC HEATING AND COOKING APPARATUS FOR SHANGHAI.—The Electricity Department has ordered twelve "cookers" from Messrs. Jardine Matheson & Co., eight ovens, and twelve combined ranges and grills from the Shanghai Electric & Asbestos Company together with 20 therol water heaters from the former firm. All this apparatus will be available for hire.

THE TOKYO RAILWAY EXTENSION.—Of the 119 miles of this project, 55 miles were to have been completed this year, but up so far only six miles are finished and an extension has been asked for.

PERSONAL.—Mr. Alexander Bell, the inventor of the telephone and promotor of aviation, paid a visit to Far Eastern ports last month.

TELEFUNKEN WIRELESS.—Permission has been granted the Telefunken Company of Berlin to instal stations in the Philippines to demonstrate the effectiveness of its system. Messrs. Germann & Co., Ltd., are the agents in the islands. This company installed a station at Yap and with the Philippines station connection would be completed between Australia and Eastern Asia.

MANILA AUTOMOBILE CLUB.—The owners of automobiles in Manila have organized a club and incorporated under the laws of the islands.

PERSONAL.—Mr. C. B. Graves, general manager of the Manila Electric Railroad and Light Co., is expected to return to the Philippines in December.

SHANGHAI TRAMWAYS.—The report of the Société des Tramways et Eclairage Electrique de Shanghai for the last financial year, says the "Electrical Review," shows a profit of £3,916, which is being devoted mainly to depreciation, leaving a small balance to be carried forward.

ELECTRICITY DEPARTMENT, SHANGHAI.—The report of Mr. T. H. U. Aldridge, Electrical Engineer, for the half year ended June 30 shows a profit of Tls. 47,721. The following comparative table is submitted:

	June 1909	1910
Total lamps connected	182,141	198,572
Motors H. P.	653	955
Units Generated	481,962	561,757
Units sold and accounted for	425,609	498,544
Private Lighting	192 493	216,756
Public Lighting	44,814	54,316
Power	19,580	39.989
Traction	148,938	163,773
Used at Works	19.784	23,710
Ratio	88 31	90.53
	lbs.	lbs.
Coal per unit generated	5.38	5.13
Coal per unit sold	6 09	5.78
Revenue	Tls. 37,299	Tls. 42,903
Expenditure	35,657 ,,	38.041
Profit	1,642 ,,	4,862
Total profit to date	31,278 ,,	47,721

NEW JAPANESE AEROPLANE.—Baron Iga is reported to have perfected a new model and proposes engaging in manufacturing aeroplanes for the market. Details of its construction are lacking.

JAPANESE WIRELESS.—The training ship Taisei Maru is to be equipped with apparatus and orders have been issued to have the Kasado Maru and the Sanuki Maru on the Formosan line similarly provided.

THE FUSAN-TSUSHIMA CABLE.—A report has been received to the effect that the Japanese Department of Communications have purchased this line from the Great Northern Telegraph Company. This cable is 60 miles long and was the last foreign cable operating in Japanese waters. The price paid is said to have been yen 150,000.

JAPANESE NAVAL BIPLANE.—Chief Naval Constructor Usioku is reported to have invented a machine equipped with hydroplanes, so as to be able to descend to the surface of the water and rise therefrom.

THE EASTERN TELEGRAPH CO., LTD.—The Eastern Telegraph Company, Limited, announce the payment on Oct. 15 of dividend at the rate of 3½ per cent. per annum, less income tax, on the preference stock of the company for the quarter ending Sept. 30, 1910, and the second quarterly interim dividend of 1¼ per cent. on the ordinary stock, free of income tax, in respect of profits for the year ending Dec. 31, 1910.

MILITARY WIRELESS FOR THE PHILIPPINES.—The latest model for field service received by the Chief Signal Officer of the Division consists of two chests which may be packed on one mule. It can be set up in fifteen seconds and has a practical working radius of fifteen miles.

JAPANESE ELECTRIC COMPANIES.—The first general meeting of the Katsura-gawa Hydro-Electric Company and the inaugural meeting of the Electric Apparatus Co. were held the latter part of October. It is the purpose of the two companies to amalgamate later with a joint capital of Yen 8,000,000.

ELECTRIC MACHINERY TRADE IN CHINA.—Mr. W. P. Ker, Commercial Attaché at Peking, states in his report that during the year 1909 contracts were given out for new electric light installations at Chungking, Chengtu, Changsha, Nanking, and Ningpo, and for more or less important extensions at Shanghai (settlements and native city), Hankow, Peking, Swatow, Mukden, and other places. Negotiations were proceeding at the beginning of 1910 for a large installation at

THE CHINESE EASTERN RAILWAY.—In the budget for 1910 the deficit amounted to 550,000 roubles, but the prospect for 1911 is brighter and net receipts amounting to 300,000 roubles are anticipated.

THE CANTON-HANKOW RAILWAY.—Advices from Peking announce the transfer of Mr. Hsi Si Tsung, assistant director of the Peking Mukden line, to be assistant director of this line.

THE BURMA RAIWAYS.—The total earnings for the half year amounted to Rs. 36,09,999, an increase of Rs. 1,15,440 over the corresponding term 1909.

SOUTH MANCHURIA AND KIRIN-CHANGCHUN RAILWAYS.—An agreement has been concluded providing for connections between these two lines. All passengers from the Kirin-Changchun line will be made at the South Manchuria station and freight at the depot of the new line except for transfer to western and northern points over the Chinese Eastern. The Kirin-Changchun company agrees to undertake the construction of the joint sidings and connecting tracks between the terminal points, half the expenditure to be chargeable to the South Manchuria Railway.

YUNNAN-BURMA RAILWAY.—The construction of this connecting line by the Chinese and the British is being promoted, the former to construct the southern section and the latter the northern. It is proposed to have the line connect with the French line in Annam.

HUKUANG RAILWAYS.—Viceroy Jui Cheng has proposed the construction of a circular railway to include Changsha, Changte and Chengchou, one line from Changte to Jungchun, another from Changte to Hsiang-yang via Ichang with future extension to Kai-feng-fu together with another from Ichang to Yunning. He has memorialized the throne for approval of a foreign loan covering these projects.

SOUTH MANCHURIA SERVICE.—Four trains a week from Dairen to Changchun were inaugurated the last of October. Trains leave Dairen at 6 p. m. Sunday, Tuesday, Thursday and Saturday arriving at 9:55 the following day at Changchun and leaving the latter point for the south at 7 a. m. Tuesday, Thursday, Saturday and Sunday.

HANKOW-SZECHUAN RELIEVES JAPANESE ENGINEER.—A report from Hankow is to the effect that Chief Engineer Hayashi has retired and that of 50 Japanese engineers formerly employed none are now associated with the line.

PROFITS OF CANTON-HANKOW BRANCHES.—The Kwantung division of this line will receive 30 per cent of the profits of the Samshui branch operated by the Three Provinces. The largest profits heretofore were $50,000 for one year, but they are expected to double during 1910.

KIRIN-CHANGCHUN CONSTRUCTION.—It is expected that construction trains will be introduced on the first 35-mile section from Changchun in April of next year. The earthwork is now well up and the work will be expedited all along the line as soon as the snow goes out so that trains will be operating by autumn.

THE SEOUL-WONSAN RAILWAY.—The Railway Board of Japan has completed plans for this line and the contract for the section between Yongsan and Ohongyangli is reported to have been let.

CHEKIANG RAILWAY.—The latest and the Chekiang situation is to the effect that the Board of Communications proposed taking over the shares of the company at 30% discount but this the shareholders refuse to consider.

RAILWAY LOANS.—Alterations proposed to the original form of the loan agreement for the Canton-Hankow Railway by the Vice-President of the Board of Communications have been refused by the foreign groups.

THE MANILA RAILWAY SOUTHERN LINES.—On the Noveleta-Naic branch the track has been laid to Santa Cruz River and as soon as bridge is finished traffic will be started to Santa Cruz de Malabon. The grading has been practically completed to Naic. *Batangas Extension.*—The line was open to Lipa in October and extended to San Jose this month. The Lucena line has been graded to Alaminos and grading San Pablo.

The Calamba-Santa Cruz de Laguna Branch was opened some time ago to Bay, the final location has been made to Magdalena and construction is progressing favorably.

11208

China, Manchuria, Japan, Indo-China, Siam, Straits Settlements, Malay States, Burma, India, Malaysia, and the Philippines

THE FAR EASTERN REVIEW

VOL. VII.—No. 7. MANILA, SHANGHAI AND YOKOHAMA, DECEMBER, 1910. 50 Centavos Philippine Currency 25 Cents. U. S. C.

The Buri Palm, One of Most Valuable Sources for Hat Material in the Philippines.

The Philippine Hat Industry

Federated Malay States Railways

Trade of Tientsin

Philippine Public Works

General News and Comment

ENGINEERING COMMERCE & FINANCE

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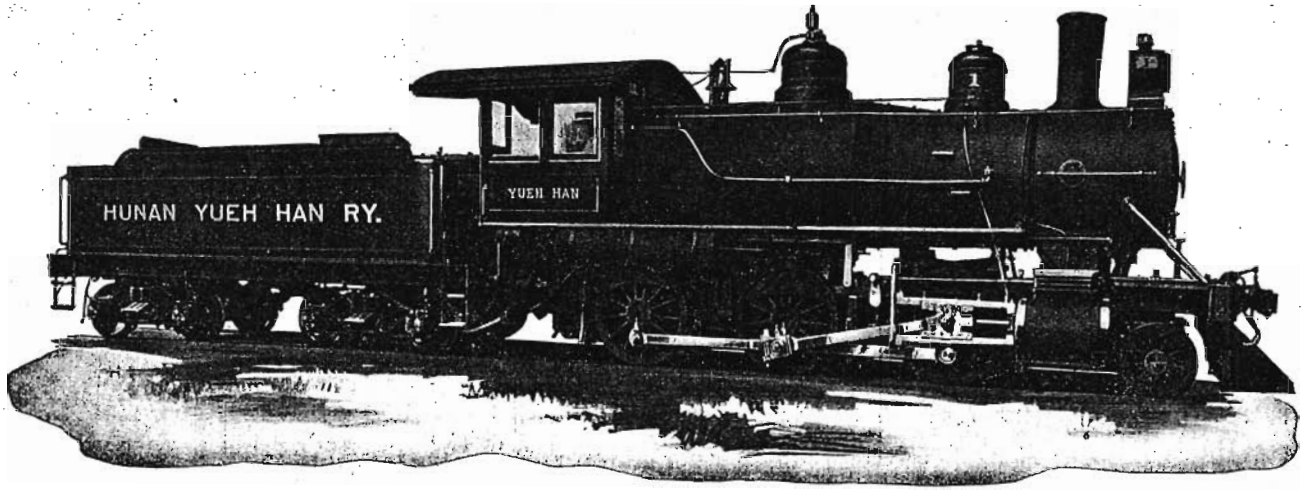
Steam, Electric and Compressed-Air

LOCOMOTIVES



PASSENGER LOCOMOTIVE FOR THE YUEH HAN RAILWAY

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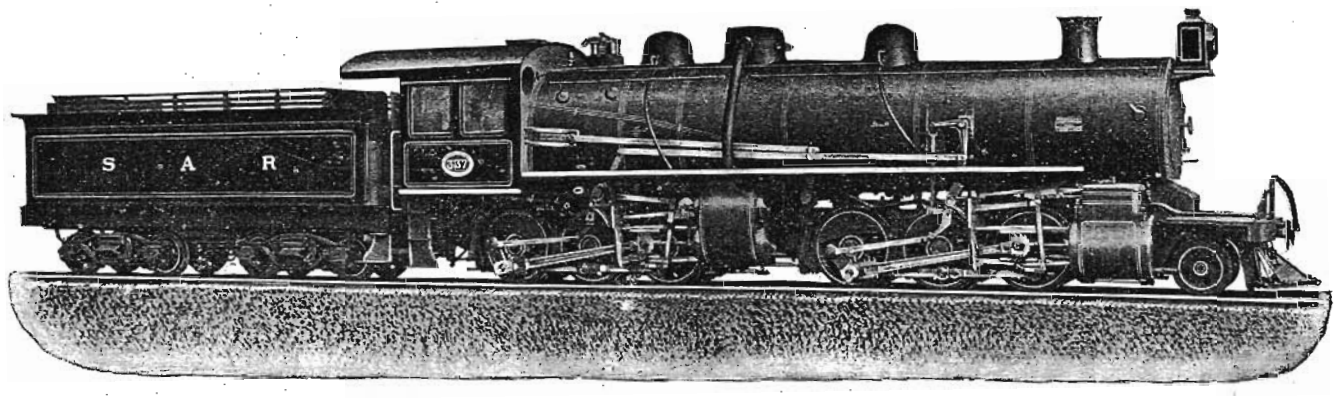
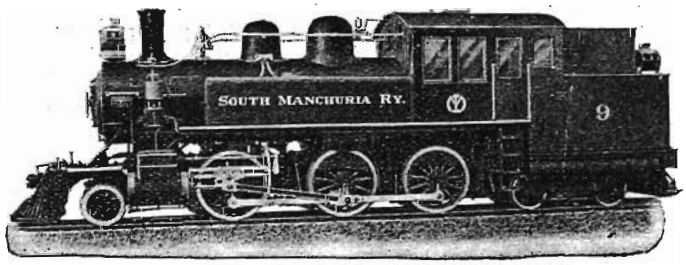
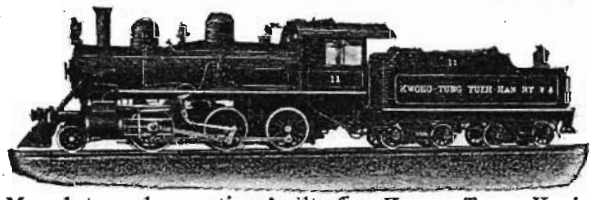


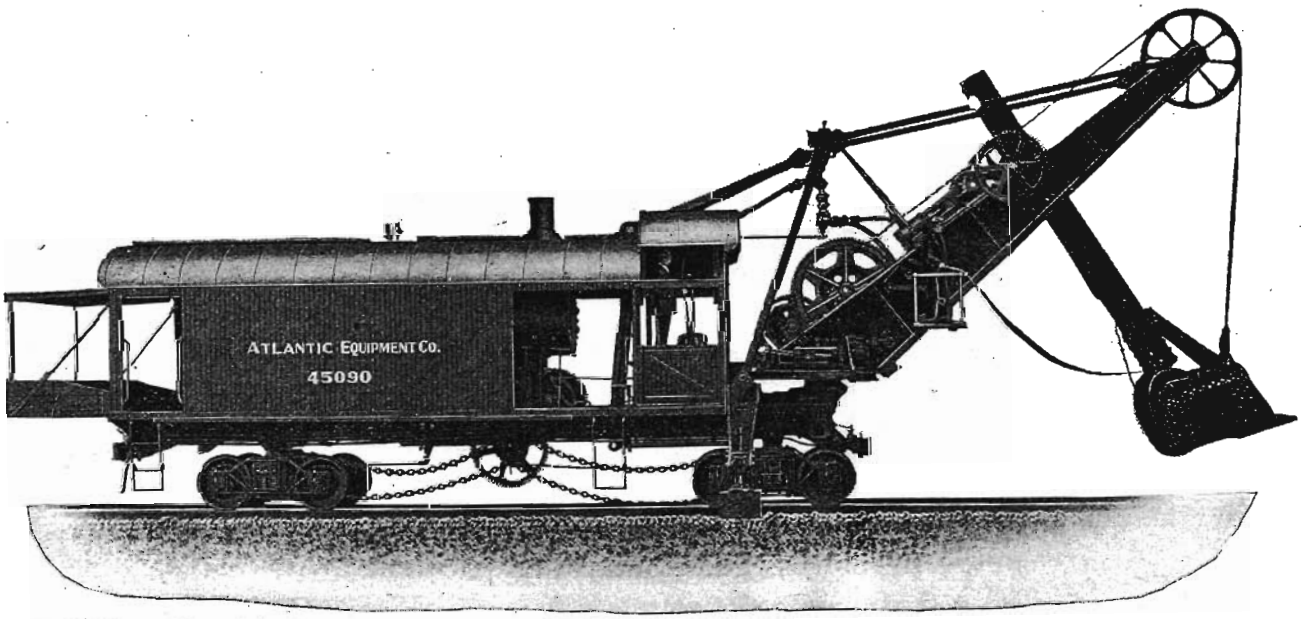
Articulated compound locomotive built for South African Government Railways to operate heavy trains on roads with steep grades and sharp curves.



Six coupled, double end locomotive built for South Manchuria Railway.



Mogul type locomotive built for Kwong-Tung Yueh-Han Railway.



Atlantic Steam Shovel for heavy or light digging. Consumes 15% to 30% less fuel than other steam shovels; handles more material; is not top-heavy; has higher lift and shorter boom. Two of these shovels are in successful operation on the South Manchuria Railway.

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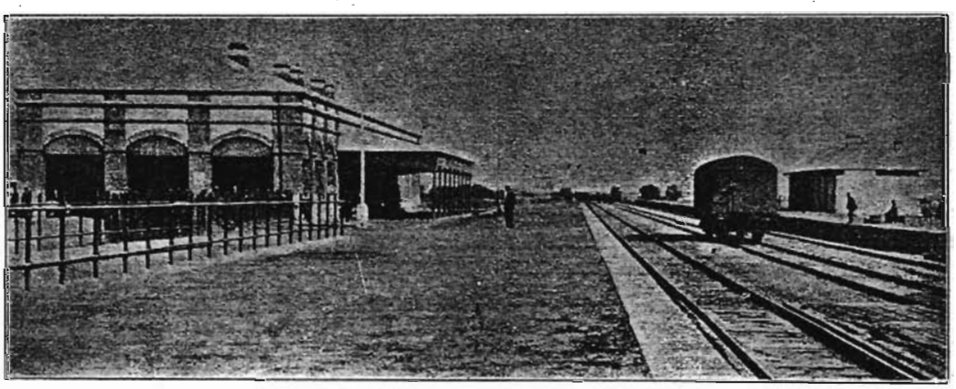
IMPERIAL RAILWAYS OF NORTH CHINA

PEKING TERMINAL STATION.

THROUGH SERVICE FROM PEKING TO MUKDEN, CONNECTING AT MUKDEN WITH THE SOUTH MANCHURIA EXPRESS FROM TRANS-SIBERIAN ROUTE: AT PEKING CONNECTION IS MADE WITH THE IMPERIAL PEKING-HANKOW RAILWAY FOR HANKOW AND YANGTSZE PORTS, AND INTERMEDIATE POINTS REACHED BY THE IMPERIAL CHEN-TAI LINE TO TAIYUANFU, THE TAO-CHING LINE, AND THE PEINLO RAILWAY TO KAIFENGFU AND HONANFU. CONNECTION IS ALSO MADE AT PEKING WITH THE PICTURESQUE KALGAN LINE, "THE ROAD TO THE GREAT WALL."



I. R. N. C.—TIENTSIN SETTLEMENT STATION.

THE IMPERIAL RAILWAYS OF NORTH CHINA PASS THROUGH THE MOST INTERESTING PART OF CHINA

PEKING: THE CAPITAL, WITH ITS WALLS, PALACES, TEMPLES AND TOMBS.—**TIENTSIN:** THE GREAT TRADE CENTER OF NORTH CHINA.—**TONGSHAN:** THE LARGEST MINING AND INDUSTRIAL TOWN IN THE EMPIRE.—**SHANHIKWAN:** WHERE THE GREAT WALL ENDS AT THE SEA.—**NEWCHWANG:** THE BUSY COMMERCIAL PORT OF MANCHURIA.—**MUKDEN:** THE ANCESTRAL HOME OF THE MANCHU DYNASTY. A MINIATURE PEKING, WITH ITS WALLS, IMPERIAL PALACES, TEMPLES AND TOMBS.

THE THROUGH TRAINS ARE EQUIPPED WITH BUFFET AND DINING CAR SERVICE, AND COMFORTABLE, MODERN COMPARTMENT SLEEPING COACHES WILL BE PLACED IN OPERATION THIS SEASON

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TIENTSIN, NORTH CHINA J. E. FOLEY, Traffic Manager

tively in developing their properties. Working agreements whereby the owners receive a percentage of net returns seem to be more popular with the owners of the ground than a transfer of property for a percentage of stock. As one prospector put it:

"We are making the 'ante' as small as possible for the mining companies. We are ready to give them exclusive rights to work our ground and take a percentage of net returns for our share The company interested simply backs its judgment after thoroughly investigating to the extent of the dredge and reaps a reward commensurate with its enterprise and judgment. This arrangement reduces the amount of capital required if purchase of land were involved and gives the owner participation in profits at a fixed ratio. Returns will thus be regulated by values and fairly divided. If the ground proves worthless through some drawback unforeseen, the company is free to abandon the project without being burdened with valueless property. There have been some reports in circulation that owners of Philippine mining ground have discouraged investment by asking excessive prices for their rights. This is not true in Nueva Ecija. We let the fences down to capital and are ready to take a reasonable share of the net values as our portion."

It is understood that the Cabu Mining Company has concluded arrangements for the installation of machinery on their property on the upper Cabu.

THE PARACALE DISTRICT.—The new dredge ordered by the Gumaus is expected installed by August, 1911, on the company's property in this district.

Last month 73 ounces of gold were received at Manila from the Philippine company's dredge representing eleven days' saving.

The examination of the Paracale Extension property by Mr. R. V. Hanlon, a mining engineer recently arrived from Korea, has been in progress with a view to securing a final report on the property preparatory to active development. This ground was formerly experted by Mr. Kane whose report placed the average values at ₱1.05. It is understood that plans for a dredge have already been completed by two Australian experts familiar with conditions in the district and that if Mr. Hanlon's report is favorable its construction will be promptly undertaken and the machinery installed by the end of 1911.

The Paracale Gold Dredging Company's stamp mill, recently arrived to handle the rich boulders found on the ground, will be in operation in January. The installation of a second dredge is being considered by this company.

THE BENGUET DISTRICT.—The Benguet Consolidated reports 130 ounces for November. The installation of the Headquarters plant is progressing and development work continues.

The opening of two good leads on the Bonanza which lies east of the Headwaters is reported.

THE GOVERNMENT COAL MINES.—In his report, Secretary Dickinson has recommended that an additional appropriation be made for the purpose of continuing the development of these deposits.

THE BATAN COAL MINES.—The installation of two of the new coal cutters has been effected and by January four will be operating, increasing the capacity to 300 tons a day. A new system of chamber mining has been introduced.

COAL IN MOROLAND.—Reports from Zamboanga are to the effect that a deposit of coal has been discovered near Margosatubig.

THE SAN MAURICIO MINE.—The mill was shut down early this month on account of the flooding of the lower levels following the heavy rains. Mr. Ripley, who is in charge of the Manila offices, stated that the season's torrential rains which have fallen this year at Mambulao have proved too much for the boiler capacity of the plant. The lower level is flooded and is draining off through the tunnel at the first level.

A shipment of 70 tons of concentrates valued at $3,500 gold has gone forward and a shipment of 65 tons is on the way from the mine. One hundred and twenty five ounces of bullion were also realized up to the date of the flooding, with the mill running very irregularly during November.

FAR EASTERN RAILWAY NEWS

THE CANTON-HANKOW RAILWAY.—A correspondent of the *North China Daily News* gives an account of his trip over this line to the railhead from Canton for a distance of 58 miles. The fare for the trip was Tls. 2 first class and the speed did not exceed 20 miles an hour. Of the construction and prospect of the line extension, he writes:

"Many sections of the line above what is opened have been worked on, and it was said that the hope is entertained that the line will be opened as far as Yingtak city, sometime about the beginning of 1912. There are more engineering difficulties encountered farther on, and these are considerable in the mountain gorge, known locally as 'The Blind Boy's Pass.' But these are being overcome. Still sometime must elapse before the line is opened as far as Yingtak, and longer still before it reaches Shiuchou city, and beyond this, we believe, nothing further has been done, or even seriously contemplated. At the rate things are going, some years must pass before the line is laid through the range of mountains which separates the Kuangtung province from the province of Hunan. Some of us will be greyer still before we can get from Canton to Peking by rail, and the run, at least in the south, will not be one to be undertaken without a generous willingness to meet sundry inconveniences."

JAPANESE LIGHT RAILWAYS.—Charters have been granted the following light railways to be operated by steam power:

The Uwonuma Railway (between Mitsuji and Kakegawa)—Length, 8 miles; steam power; capital, 200,000 yen.

The Tomo Railway (between Tomo and Fukayama)—Length, 7 miles; steam power; capital, 200,000 yen.

The Chugoku Railway (between Harakoisai-inari and Kakegawa)—Length, 1 mile; steam power; capital, 75,000 yen.

The Mimasaka Railway (between Tsuyama and Hmi)—Length, 16 miles; steam power; capital, 800,000 yen.

The Awa Railway (between Tokushima and Komatsushima)—Length, 7 miles; steam power; capital, 650,000 yen.

The Kada Railway (between Wakayama and Kada)—Length, 5 miles; steam power; capital, 650,000 yen.

The Ise Railway (between Tsu and Yokkaichi)—Length, 21 miles; steam power; capital, 500,000 yen.

The Chiba Railway (between Narita and Tako, and Kashiwa and Noda)—Length, 13 and 9 miles; steam power; capital, 410,000 yen.

The Yoshino Railway (between Yoshinoguchi and Kitada)—Length, 7 miles; steam power; capital, 200,000 yen.

The Railway Board is now considering the following applications:

The Nose Myoken Railway (between Ikeda and Yoshikawa)—Length, 10 miles; steam power; capital, 500,000 yen.

The Hanbi Railway (between Emi and Kamigori)—Length, 16 miles; steam power; capital, 200,000 yen.

The Chuwo Railway (between Kawaguchi and Iwatsuki)—Length, 13 miles; steam power; capital, 800,000 yen.

The Shimotsui Railway (between Shimotsui and Chayamachi)—Length, 12 miles; steam power; capital, 300,000 yen.

The Ikomayana Railway (between Osaka and Nara, between Yokkaichi and Komono and between Ihara and Kasaoka)—Total length, 52 miles; steam power; capital, 2,050,000 yen.

BURMA RAILWAYS —The receipts for the half year amounted to Rs. 41, 34, 395, an increase over the corresponding term in 1909 of Rs. 42,392.

CHINESE SECTION OF THE KOWLOON-CANTON RAILWAY.—The opening of the first section of 30 miles from Canton to Tong Mei was celebrated, December 5, by an excursion over the line. A special train of two combination first and second class coaches, four third class and two third class and van combined. A 101-ton locomotive purchased from the North British Locomotive Works, Ltd., pulled the train to the railhead slightly under one hour's running on the outward trip and 40 miles an hour on the return. A luncheon was served at the Tai Sha Ton terminus. The guests included the leading British and Chinese officials and speeches were made by Taotai Sha., H. E. Chao, the managing director, Mr. Frank Grove, chief engineer, Mr. J. W. Jameson, C. M. G., British Consul General, H. E. Wai Han, the late director general, Mr. John Johnstone representing the British and Chinese Corporation and the Hon. H. E. Pollock, K. C., in the absence of Mr. L. A. Bergholtz, American Consul General. In the evening Chief Engineer Groves entertained to dinner.

The construction of the Chinese section was begun in 1908 and, according to the best expert opinion, will be completed and in operation by July 1, 1911. Rails have been laid from the British end at Lo Wu and also from Tong Mei while construction work is in progress on the two remaining sections. The bridging of the East River Valley offers the greatest difficulty, but the material is already on the ground and construction under way. There are three spans of 224 feet each and two of 60 feet each. The length of the Chinese Section is 87 miles.

THE STANDARD GAUGE IN JAPAN.—The discussion over the widening of the railway gauge in Japan continues and the opponents to the measure point to the condition of finances as a reason for the postponement of the project. However, last month the cabinet decided upon the early realization of the plan in principle and favored the early reconstruction of the Tokyo-Shimonoseki line and it is not improbable that the work will be completed simultaneously with the Antung-Mukden and the standard gauge would prevail throughout.

The original plan was to spread this work over a period of thirteen years at the rate of 10,000,000 yen annually, but the sentiment in favor of speedy reconstruction will no doubt prevail.

THE KIRIN-CHANGCHUN RAILWAY.—A report from Mukden is to the effect that the rails have been laid seven miles from Changchun towards Kolunchieh, the end of the first section, and work is progressing rapidly with a view to opening the entire section to traffic by the first of the year.

THE HEILUNGCHANG RAILWAY.—Viceroy Hsi-liang has announced his approval of the selection of Tiehling as the western terminus of the line on account of the proximity of Tiehling to the Liao River and the advantage of water transportation from that point. The alternative of Kaiyun, which is situated about 18 miles from the Liao, is turned down by the Viceroy for the reason that the line would become a feeder of the South Manchuria Railway and would divert the traffic from Yinkou to Dairen.

KOREAN RAILWAY NEWS.—The new railway station at Fusan, constructed at a cost of Yen 300,000, was completed last month. Light railways between Masan and Mokpo, Wonsan and Hombeung, and Chongjin and Hoilyong are projected and plans and estimates are being prepared.

FORMOSAN RAILWAY.—The following excerpt is from the report of the Governor-General of Formosa:

"The principal organs of land communication are the Government railways, private railways of the sugar refinery company and other light railways. The Government railways which are opened to traffic are 248 miles between Kilung and Takuo, 13 miles 7 chains between Daito-tei and Tamsui, 10 miles 6 chains between Takuo and Kyukyokudo and a part of the Arisan railway which was opened to traffic on Oct. 1st, its mileage being 9

FAR EASTERN ENGINEERING, CONSTRUCTION, COMMERCIAL AND FINANCIAL NEWS

miles 8 chains. The Taito light railways are 34 miles 5 chains between Karenko and Bashisho and 32 miles 2 chains between Shinkaien and Hinan so that the total mileage is 348 miles 5 chains. Private railways worked by steam power in the year 1907 there were only 19 miles 5 chains, but the mileage has suddenly increased and at present the total mileage reaches 446 miles and 3 chains, and when the mileage of those lines applied for is included the total mileage will run up to 623 miles 4 chains. The line is intended for the purpose of collecting the material for sugar and for the purpose of the conveyance of goods. With the increase of the emigrants and the development of industry there is every tendency for the increase of the mileage. The total number of rolling stock needed for sugar manufacturing purposes is at present 55 engines, 43 passenger cars, 8 vans, and 3796 freight cars. The hand pushing light railway was first built at a time of the occupation of the island by our military department for the purpose of the conveyance of military goods but since then it has been allowed to be used for the benefit of the public. At present the total mileage of this railway numbers 177 miles 9 chains and the number of rolling stock is 2538. Besides there are 55 miles 3 chains of unfinished lines and 8 miles 4 chains of the lines for which applications have been made. The total capital needed for the management is 504,000 yen. These lines are all managed by either companies or associations. These cars are pushed by coolies, and freight cars are but poorly constructed though the economic and public interests given by these lines are quite numerous. These freight cars compared with the usual mode of conveyance adopted by the natives are, however, more or less effective and the fare is comparatively lower, while the speed is quite large. The dividend of these companies ranges from 10% to 20% annually and since there is every prospect of increase it goes without dispute that they will be useful in the economic development of the island."

SUPPLY OF RAILWAY MATERIAL.—Messrs. The Weldless Steel Tube Company, Limited, Birmingham, have an order from the Burma Railways for the supply of steel ferrules and the Vulcan Foundry Company for locomotive spares and duplicate parts. Messrs. Jas. Reid and Company, Limited, England, are supplying the South Indian Railway Company with steel fish-bolts and nuts for 50lb. steel metre gauge rails and Messrs. Horton and Company, Limited, with steel fish-bolts and nuts for 41½lb. rails. Messrs. Blockow, Vaughan and Company, Limited, had a large order for the supply of angle steel fishplates for 41lb. rails to the South Indian Railway; Messrs. G. Cooper and Sons, Limited, Sheffield, for dog-spikes; and Messrs. Guest, Keen and Nettlefolds, Limited, London and Birmingham, for bearing plates for timber sleepers. Messrs. Burn and Company, Howrah, have an order from the East Indian Railway Company for supplying iron and steel work complete with columns, trusses, etc., for ten goods sheds on the H. K. section; supplying and erecting iron and steel work for 63,000 square feet open shed for the new Howrah station; and iron and steel work for six third class waiting sheds at various railway stations on the Hooghly-Kawata Branch. They are also supplying to the North-Western Railway the iron and steel work for a large goods shed at Badami Bagh; and to the Bengal-Nagpur Railway and Oudh and Rohilkhand Railway a large quantity of 6 feet 60 feet girders, besides undertaking to supply on order a locomotive for a privately-owned Light Railway Company. Messrs. Hurst, Nelson and Company, Limited, Glasgow Rolling Stock and Plant Works, Motherwell, N.B., are supplying the steel underframes and ironwork, etc., for 66 covered goods bogie wagons and 50 open goods bogie wagons to the Bengal-Nagpur Railway for their narrow 2 feet 6 inch gauge extensions. Messrs. Stapleford and Company, Limited, have an order for the supply of the underframes and bogies, etc., for eight composite 1st and 2nd class carriages, five intermediate and third class carriages and eighteen 3rd class carriages for these extensions. Messrs. Orenstein and Arthur Coppel have in hand at present an order for a locomotive 50 h.p. for coal and liquid fuel together with a number of heavy iron box wagons for a stone quarry; one mile of track with a number of wagons and switches for railway construction work; 1¾ mile track with 25 wagons for one of the biggest sugar factories out here and 40,000 dog-spikes for B.G. section rails ordered by two of our State Railways. Messrs. W. Bain and Company, Limited, England, have a large order for the supply of "Dacoit" fencing materials to the East Indian Railway; and Messrs. Verity's Limited, London, for the supply of a large quantity of electric lamp and fan fittings. Messrs. J. Pain and Sons, Limited, England, have just supplied 5,000 fog signals to the East Indian Railway; Messrs. J. Reid and Company, Limited, 72,000 enamelled labels; and the British Westinghouse Engineering and Manufacturing Company, Limited, London, six voltmeters for the Electrical Department of this Railway.—*Railways and Shipping*.

ELECTRIC RAILWAYS, LIGHT, POWER, TELEPHONES, TELEGRAPHS, AEROPLANES, ETC.

ELECTRIC SUPPLIES IN MANCHURIA.—U. S. Consul Roger S. Greene, of Harbin, writes:

"The Chinese are at present much interested in electric-lighting enterprises for their principal cities. There is one in operation at Kirin City, an American company having just made a contract with the taotai of Changchun for the installation of a lighting plant there, and the authorities of Heilungchiang are now asking proposals for machinery to be installed at Tsitsihar, the provincial capital, capable of operating 5,000 lights, and lighting equipment for 3,000 lights to begin with. Tsitsihar is supposed to have about 50,000 inhabitants. It is not now of great commercial importance, but when the Chinchou-Aigun Railway is built it is likely to become a flourishing trade center.

"There are in the Valleys of the Sungary and its tributaries in the western parts of Heilungchiang Province a number of new and growing towns—Hulan, Suihwafu, Tunkun, Hailun, Bayanchou, etc.—which have a promising future, as they are situated in a very fertile region, and some of them are easily accessible by water in the summer. Most of them are larger than Tsitsihar. A railroad is projected to connect several of these towns with the Chinese Eastern Railway near Harbin. In Kirin Province also there are a number of promising towns which might be induced to purchase small lighting plants or telephone systems, as, for example, Shuanchenpu, Ashiho, Ninguta, etc. In none of these places can anything be done on a very great scale as yet, and the negotiations, even where there is real business in sight, are likely to be long and trying, but for those who intend to enter the field seriously the effort ought to be worth while.

"In Harbin, the only important European settlement in Manchuria, there is no central lighting system, but there are 15 or more private plants, many of which sell light to their neighbors. As soon as the settlement is organized the question of establishing a central electric lighting plant, street railways, and probably a new telephone system, will come up. There is now an inadequate telephone system here operated by the railway company. The annual subscription for one instrument comes to about $60. Electric light costs from 13 to 16 cents per kilowatt hour, charges having been considerably reduced lately on account of the installation of a new plant. The population of Harbin is estimated at about 60,000 to 75,000.

"There are agents of European companies here, who carry ordinary small electrical supplies in stock. Other stores also carry European electrical supplies. These people have hitherto done little business with the Chinese, their efforts being mainly devoted to the European.

PHILIPPINE WIRELESS.—The work of the wireless telegraph board has been completed and its recommendations forwarded to Washington. The principal high power stations will

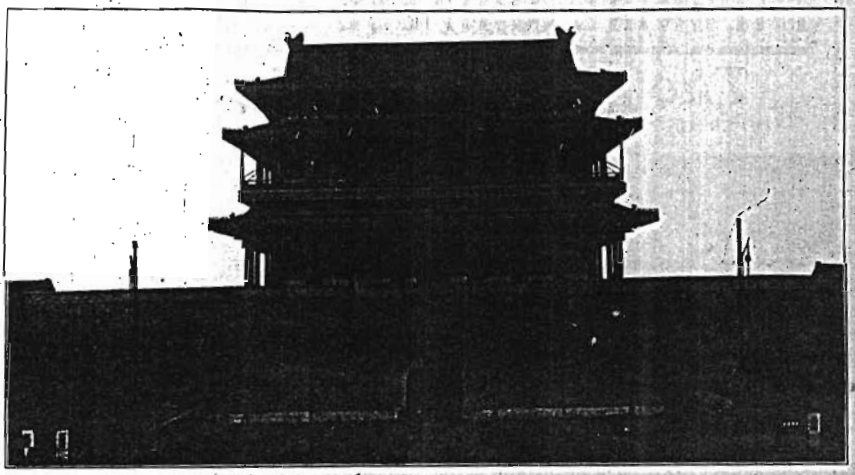
THE FUKIEN RAILWAY CO.—The Amoy correspondent of the *China Mail* refers to a meeting of directors to consider plans for a change of route and writes:

"In consequence of the almost prohibitive cost of bridging the North River so far down as the present stone bridge, commonly known as the 'Pholam Bridge,' but more correctly as the Kang Tang Kio, which is the nearest and most natural route to the city of Chang Chow Fu, it is now suggested to take the line along the northern bank of the North River as far up as the town of Pholam, and then to build a bridge across the river at that point, curving round southwards to the city of Chang Chow Fu. It would of course make the distance from Amoy to Chang Chow Fu considerably longer, but it would tap two most lucrative sources of income, the very large North River area at a much more accessible point. and the extensive Tio Thoa, or Chang Ta, County. It would require two smaller bridges, as well as the bridge across the North River, one over the Tio Thoa river, and one over a smaller tributary, both of which enter the North River from the northern bank. But probably the total cost of the three bridges would be much less than the estimated cost of the bridge originally proposed nearer the mouth of the river. Undoubtedly such a modification of the scheme would bring a much larger revenue than the first proposal, but I should fancy the Chang Chow people would much prefer the original scheme, since it will of course take a much longer time to get to Amoy if the railway runs round via Pholam. It will mean the adding of rather over twenty miles to the distance."

CANADIAN PACIFIC RAILWAY ACTIVITY.—An annual report of the Canadian Pacific Railway shows sales of agricultural lands during the year ended June 30, 1910, aggregating 975,030 acres for $14,468,564, being an average of $14.84 per acre, according to U. S. Consular reports. Irrigated land brought $26.59 per acre, so that the average of the balance was $12.78. The company will spend $8,500,000 on the eastern section of the irrigation block to provide water, the work to extend over three years.

The number of passengers carried was 11,172,891, as against 9,784,450 the year previous. Tons of freight carried jumped in a year from 16,549,610 to 20,551,868. The system, with its varied activities, railways, steamships, hotels, elevators, workshops, lands, town sites, and irrigation works, represents an investment of $526,250,289, in addition to 12,000,000 acres of land in Manitoba, Saskatchewan, Alberta, and British Columbia. The railway and its equipment represents $317,226,265 of this amount.

THE HANGCHOW-NINGPO RAILWAY.—Tidewater bridges at Hangchow and Pahkuan are the most difficult features of construction on this line, but progress is reported. A large force is engaged working from the Ningpo end toward Yu yao and the work of grading is progressing on the other end of the line. It is not probable that the end of 1911 the line will be operating with a ferry making connections across the Chin-Tang river.



CHINESE IMPERIAL RAILWAYS

PEKING-HANKOW LINE

"THE ROAD THROUGH THE HEART OF CHINA"

Avoid the Cold and Rough Weather in the Sea Trip between Shanghai and the North by the more comfortable Route up the Yangtsze to Hankow, and from there via the Ching-Han Railway to Peking, where through connections for Europe are made with the Trains de Luxe of the Imperial Railways of North China.

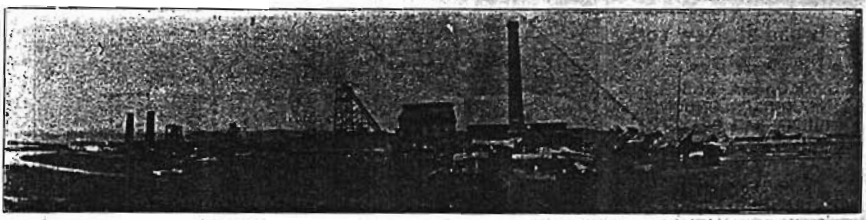
This line passes through the Heart of the Empire and enables the traveller to and from Europe to catch a glimpse of Old China. Ancient walled cities, temples and pagodas are seen from the comfortable seats of the weekly trains de luxe operated by this line. From Peking, the great capital of the oldest civilization in the world, the train departs from the famous Chien-Men and carries the traveller through the historical and legendary portions of the Empire, to the modern industrial center at Hankow—the Chicago of China. Connections are made with the Cheng-tai Railway at Chengtingfu, with the Tao-Ching Line at Sin Siang-sien, and at Chengchowfu with the Pienlo Line.

A weekly express train de luxe leaves Peking every Tuesday, and Hankow every Friday, making the trip of over 700 miles in less than thirty hours.

IMPERIAL CHINESE RAILWAYS

THE TAO-CHING RAILWAY

(Imperial Chinese Government Honan Line) Pekin-Syndicate Railway



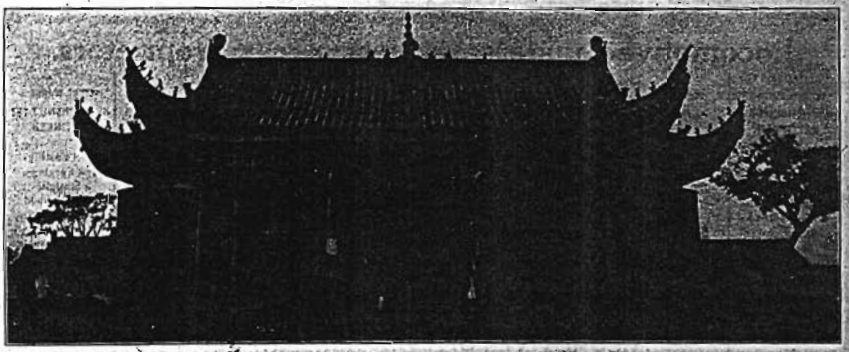
GENERAL VIEW OF COAL MINES ON THE LINE OF THE TAO-CHING RAILWAY

"China's Road of Anthracite"

THE TRAINS OF THIS LINE CONNECT AT SIN-SIANG-SIEN WITH THE THROUGH SERVICE OF THE PEKING-HANKOW RAILWAY, IT TAPS THE GREAT ANTHRACITE COAL DEPOSITS OF SHANSI, AND CONVEYS THE PRODUCTS OF THE MINES TO THE NEAREST NAVIGABLE RIVER.

THE PIEINLO RAILWAY

"THE FIRST SECTION OF THE PROJECTED CENTRAL TRUNK LINE" (KAIFENG-FU TO HONAN-FU)



CHUNG-HUAN TEMPLE, KAIFENG-FU.

This line connects with the through service of the Peking-Hankow Railway at Changtingfu, enabling the traveller to visit Kaifengfu, the provincial capital of Honan, and the old capital of the Empire at Honanfu.

AMERICAN TRADING CO.

ENGINEERING DEPARTMENT

SZECHUAN ROAD, SHANGHAI; YOKOHAMA, KOBE

Export and Import Merchants

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BRANCHES:
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SHANGHAI, LONDON,
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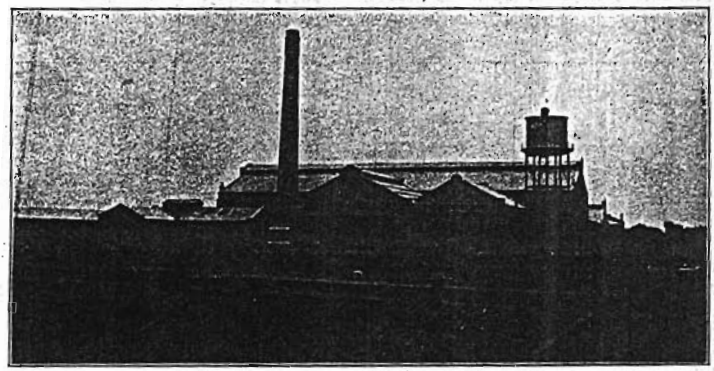
Industrial Plants;
Railway, Mining,
Electrical and General
Engineering Supplies



FLOUR MILL AT SHANGHAI EQUIPPED WITH ALLIS-CHALMERS' MACHINERY, ERECTED BY THE AMERICAN TRADING CO.

Agents for ALLIS-CHALMERS CO., Milwaukee

HENSCHEL & SOHN,

CASSEL, GERMANY.

ESTABLISHED 1817

Locomotive Builders & Steel Works Proprietors.

Locomotive Works, CASSEL.

Annual Capacity, 800 Locomotives. Total Output exceeds 10,300.

Milan Exhibition, 1906: GRAND PRIX.

STEEL WORKS:
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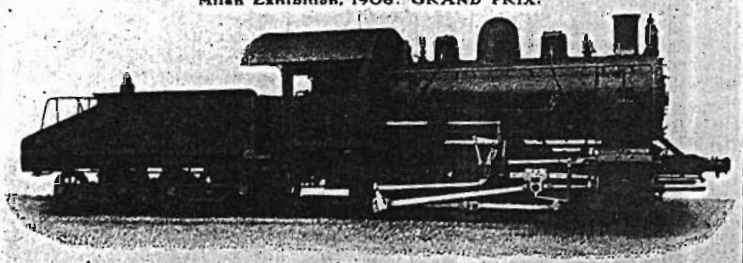
Boiler Plates, Boiler Ends, Tubes, Dished and Flanged Plates, Domes, etc. Black and Galvanised Sheets, Buckle Plates, Gas and Steam Pipes, Electric Welded and Riveted Drums, Steel Casks, Trucks for Collieries, etc., etc.



Type of Locomotives for The Kiangsu Railway, China.

LOCOMOTIVES OF EVERY DESCRIPTION.

From lightest to heaviest types, to suit any gauge. Special designs made for Contractors, Mines, Street Railways, etc.

STEAM MOTOR CARS.

NUT PRESSES, "KETTLER SYSTEM" (Working without any Waste of Material.)

STEEL WORKS:
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Steel Castings and Forgings, Straight and Cranked Propeller Shafts, Stern Posts, Rudder Frames, Mill Housings, Cast Steel Rolls, Wheels and Axles, Crank Axles, Tyres, All Parts for the Construction of Locomotives and Machinery.

General Agents for China, CARLOWITZ & CO., SHANGHAI

FAR EASTERN RAILWAY NEWS

THE CHEKIANG RAILWAY.—The recent removal of the president of this company that raised a storm of protest has been followed by continued agitation for the cancellation of the loan agreement. It will be remembered that a British loan was arranged for this road through the Board of Communications and the control of the money payments was left to the discretion of the Hongkong and Shanghai Banking Corporation. The control of the expenditure was in the hands of Chinese and the bank did not consider the construction methods such as would warrant them in paying over the loan. Indeed it is reported that when an agent of the British Syndicate that advanced the loan made an attempt to investigate the railway accounts the Chekiang Railway people refused to treat with him. According to the agreement between the Ministry of Communications and the railway, the loan agreement should be cancelled if after eighteen months the money was not paid over to the company by the ministry. This time has elapsed and on this ground the company declares that the agreement is forfeited.

Peking claims that had the company conformed to the understanding with the British Syndicate, instead of refusing to deal with its representative, the money would have been turned over, and since the blame rests with the Chekiang people and that all the other parties to the agreement had stood ready to do their share, the agreement would stand.

On the other hand, the Chekiang Railway claims that the only difference had with the British Syndicate was based on the character of construction and that the directors of the railway company had never waived their right to use their own judgment as to the standard of construction.

PHILIPPINE RAILWAY PROSPECTS.—The construction of lines of railway through undeveloped areas is a striking charasteristic of modern colonization and perhaps in no instance in recent times has there been more prompt response in returns for traffic than in the Island of Panay where practically an entirely new agricultural empire is being founded. The response in the last three months since the line was completed has exceeded all expectations. The best farming land in the island heretofore inaccessible is being taken up by natives and large producing areas realized which give promise of further expansion. The receipts are steadily increasing and the company is exhausting every effort to encourage the farmer. According to Mr. Goodale, the Supervising Railway Expert, the Panay line is a good railway proposition. The same may be said of the line in Cebu. The advantage of better transportation facilities is appealing to the native farmer and the results are shown in increased receipts. The company has carried out a policy of cooperation with the farmer and businessman that has served to make the line popular. The increased trade at Cebu and Iloilo during the last year has astonished the authorities and railway officials who did not anticipate such substantial progress for some years. The permanent character of the construction of these lines with the ever increasing traffic gives promise that, in a decade, the Philippine Railway will be one of the most valuable properties in the East.

KAIFENG-TSINGTAO EXTENSION.—Negotiations continue between German capitalists and the Ministry of Communications over the proposed extension of the Kaifeng line to Tsingtao via Kaomi.

SAIGON-BANGKOK RAILWAY CONNECTIONS.—Year by year rail communication between those two centers is being advanced on either side of the boundary. On the Bangkok end the line has been advanced to Petriou, while on the Indo-China side a loan has been authorized for 11,500,000 francs to cover the estimate of a line between Mytho and Cantho which when completed will add another section connecting Saigon and Pnompenh. Then there is also the sum of francs 24,000,000 for a railway from Pnompenh to Battanbong. With this construction completed, there will be few gaps to fill to conclude the projected through rail between the two centers. And by the time this is accomplished Bangkok will be connected up with Singapore and probably with Penang.

SUPPLY OF INDIAN RAILWAY MATERIALS AND STOCK.—The Anderston Foundry Company, Limited, England, have a large order from the South Indian Railway for the supply of wrought-iron tie bars and gibs and steel cotters for cast-iron sleepers. Messrs. Guest, Keen and Nettlefold, Limited, London and Birmingham, have a large order from the same railway for the supply of coiled steel keys; and Messrs. Blockow, Vaughan and Company, Limited, for the supply of fishplates for 50lb. steel rails and angle fishplates for 41lb. steel rails. Messrs. Jessop and Company, engineers, have received from the East Indian Railway an order for the supply of ironwork which is required for the strengthening of a large number of iron covered goods wagons and iron open goods wagons. Messrs. John Lang and Sons, Limited, lathe makers, Johnstone, N. B., are supplying two of their universal self-acting lathes to the Burma Railway workshops; and The J. C. Nicholson Tool Company, Limited, a combined welding and forging machine. The Pneumatic Engineering Appliance Company, Limited, have supplied a screen shaker to the Burma Railways Company. Messrs. Cammell, Laird and Company, Limited, Victoria Street, London, S. W., and Proprietors of the Cyclops Steel and Iron Works at Sheffield, have an order for the supply of 4 000 volute springs for rolling-stock to the East Indian Railway; and Messrs. D. Moseley and Sons, Limited, for the supply of one thousand india-rubber buffer draw springs. Messrs. J. Baker and Company, Limited, have a contract for the supply of 200 pairs of wheels and axles for rolling-stock to the East Indian Railway; and Messrs. F. W. Berk and Company, Limited, have supplied 200 gallons of sulphuric acid. Messrs. The Birmingham Railway Carriage and Wagon Company, Limited, have received an order from the East Indian Railway for supply of steel underframes and ironwork, etc., for 42 carriages and ten horse boxes. Messrs. T. Turton and Sons, Limited, Sheaf Works, Sheffield, have an order for the supply of laminated springs for rolling stock to the Assam-Bengal Railway; and Messrs. Sir W. G. Armstrong, Whitworth and Company, Limited, Openshaw Works, Manchester, for a cylinder for a 5-ton accident crane. Messrs. Dorman, Long and Company, Limited, Middlesborough, had a contract for galvanised iron sheets. Messrs. B. and S. Massey, Limited, Openshaw Manchester, are supplying a 5-cwt. pneumatic power hammer to the Bengal Nagpur Railway; and Messrs Dean, Smith and Grace, Limited, Keighley, some light workshop lathes. Messrs. Greenwood and Batley, Limited, Armley Road, Leeds, have an order for the supply of a bolt and nut forging machine. Messrs. Schuchardt and Schutte have a contract for the supply of hobs for a gear-cutting machine. The Electric and Ordnance Accessories Company, Stellite Works, Birmingham, have a large order for the supply of electric motors and switch gear to the Bengal-Nagpur Railway; and the Globe Electric Company, Limited, for the supply of flame arc lamps. Messrs. Dorman, Long and Company, Limited, Structural Engineers, Middlesborough, had an order from the East Indian Railway Company for the supply of 38 bridge girder spans which are required for the Company's new extensions. Messrs. J. Reid and Company, Limited, were supplying 7,200 enamelled labels; and Messrs. Tearne and Sons, Limited, a large quantity of transferables for the East Indian Railway Carriage and Wagon Department. Messrs. Lilleshall and Company, Limited, have supplied one left hand cylinder for a colliery winding engine.—*Railways and Shipping*.

PHILIPPINE RAILWAY CEBU.—TERMINAL DURING CONSTRUCTION

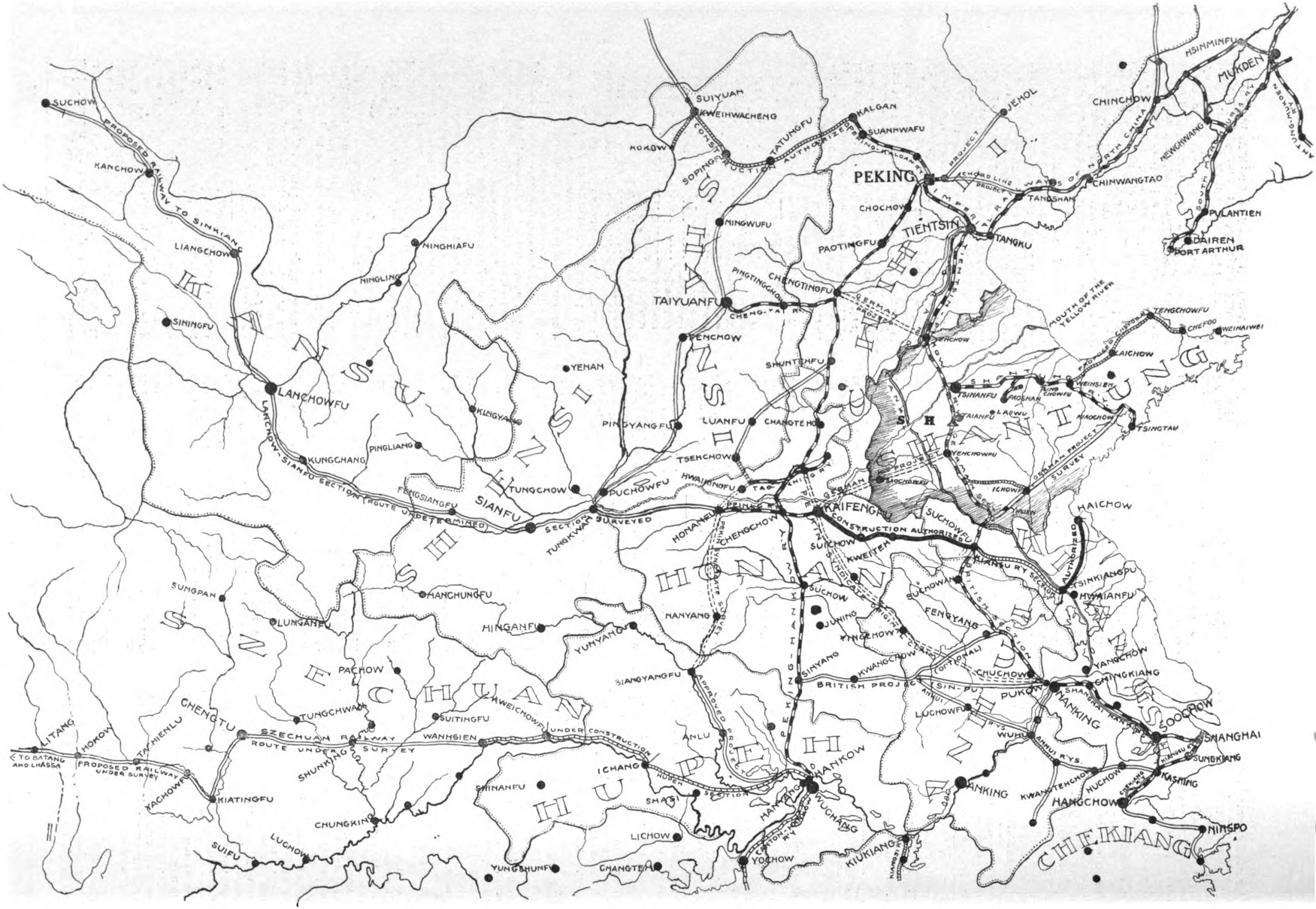
CEBU PASSENGER DEPOT AND OFFICE BUILDING

TIENTSIN-PUKOW-RAILWAY.—Through trains from Tientsin to Taianfu were inaugurated December 20, all the bridges having been completed with the exception of the Yellow River structure which is not expected installed for a year at least. A steam ferry is in operation. The opening of the section between Tsinanfu and Taianfu was celebrated by the laying of the corner stone of the Taianfu Station at the foot of the sacred mountain of Tai Shan.

JAPANESE RAILWAY BOARD PURCHASES FOREIGN ROLLING STOCK.—The following tenders were submitted for the supply of 6,000 pairs of wheels and axles. Messrs. C. Illies & Co.' representing Fried Krupp were the lowest:

Messrs. C. Illies & Co	544,359.00
Mitsui & Co	553.296 00
Okura & Co	572,900 00
A. Cameron & Co	572,250.00
Iida & Co	585,164.90
Takata & Co	591.855.82
Sale & Frazer Co	592.696.00
Hunter & Co	599,200.00
J. Nishizawa & Co	603,547.00

LIENSHAN-MUKDEN RAILWAY.—The *Japan Mail* directs attention to a report appearing in the *Asahi Shimbun* to the effect that a Japanese correspondent from Lienshan states that the land necessary for the new town at Lienshan has been acquired, and that a line of



THE FAR EASTERN REVIEW'S SKETCH MAP OF RAILWAYS IN CENTRAL CHINA

The line of the proposed Kaifengfu-Haichow railway is traced in black, except that portion between Suchowfu and Tsingkiangfu, which is to be constructed by the Kiangse Railway Co., a] Chines concern. The German sphere of influence in Shantung Province is shaded. The new project of the Chinese Government, as outlined on the map, clearly shows its great political importance and bearing on the ambitions of Germany, and the prospects of the British lines, and also its relation to the great Trans-Asiatic trunk line approved by China. The Peking Syndicate railway claims to an outlet from th mines to the Tientsin-Pukow railway are practically nullified by the new Chinese scheme. The German project to link the Tientsin-Pukow line with Kaifeng via Tsaochowfu is also without value in view o the new road. It will be noted also that Haichow stands in the same relation to the Yangtsze River junk traffic, as does the great port of Shanghai, and much of this can be diverted through the Gran Canal to Tsingkiang-fu and through the Yen River or over the new railroad to the new Port of Haichow.

light railway will be laid between that place and Mukden by the early part of January. If this be true, and we see no reason to doubt it, a very interesting development is about to take place. But it remains to be seen where funds will be found for the projected work. We presume that what is now being done is a part of the so-called minor scheme recently mapped out by an English engineer. But even that scheme requires an expenditure of 3 million taels, and there has not as yet been any definite information suggesting that such a sum has been procured.

STANDARDIZING JAPAN'S RAILWAYS.—A great deal of space is being given in the Japanese press to this subject and definite information as to the railway policy is included in the following program made public by the Government:

I. The plan for the widening of the gauge shall be defined in details and the order of the work be decided.

II. The construction of the projected lines shall not be delayed by the broad-gauge scheme.

III. Not only shall the construction of the projected lines be not delayed, but the appropriation for the purpose shall be increased as compared with the past three years.

Repair measures shall also be taken with regard to such lines as are to be turned into the broad-gauge system.

IV. A Bill for the subsidies to light railways shall be introluced into the Diet, and at least a sum of 10 million yen shall annually be appropriated for the purpose, with a view to improving the means of communication.

V. Light railways shall be built in Hokkaido and on the main land under the management of the government.

For widening the gauge to standard Yen 230,000,000 will be expended in the next 13 years as follows:

1911	4,449,000
1912	4,500,000
1913	6,000,000
1914	10,003,000
1915	13,000,000
1916	14,000,000
1917	15,000,000
1918	25,000,000
1919	27 000,000
1920	27,000,000
1921	30 000,000
1922	30,000,000
1923	24,051,000

MANILA RAILWAY COMPANY'S ACTIVITY.—Construction on the southern lines is progressing favorably. The Calamba-Santa Cruz, which when completed will be 48 kilometers in length, is now being operated for 18 kilometers, and of 63 kilometers of the Santo Tomas-Lucena, about 12 are completed. These branches are feeders of the Manila-Batangas line and the traffic returns are increasing as the lines extend in a measure most encouraging.

In Northern Luzon the company is busy on a survey of the proposed Baguio branch. Several routes are under consideration. There are 25 kilometers open to traffic on the Panique-Taiyug line which will be 50 kilometers in length when completed. The extension of the main line, from Dagupan north to San Fernando, is expected completed within two years if not at an earlier date. It is believed that the entire program of railroad construction as at present contemplated will be completed within the next three years.

JAPANESE LIGHT RAILWAYS.—According to the *Financial and Economic Monthly*, for December, the light railway lines that have been sanctioned since the promulgation of the Light Railway Law on the 3rd of August are 12 in all, though there are still 10 applications still under examination. Those already sanctioned are the Hiratsuka-Hachiwoji line of 24 miles in Saitama prefecture, the Narita-Kashiwano of 22 miles in Chiba prefecture, the Yoshinoguchi-Kitata of 7 miles in Toyama prefecture, the Atsuta-Tokomani of 19 miles in Aichi prefecture, the Wakayama-Kata of 5 miles in Wakaoka prefecture, the Tsu-Yokkaichi of 21 miles in Miye prefecture, the Fukui-Ono of 21 miles in Fukui prefecture, the Mitsuji Kakegawa of 8 miles in Niigata prefecture, the Tomoi Fukuyama of 7 miles in Fukuyama prefecture, the Tsuyama-Emi of 16 miles in Mimasaka province, the Tokushima-Komatsujima of 7 miles in Tokushima prefecture, and the Harako-Kakegawa of one mile in Chugoku provinces.

PRAISE FOR THE F. M. S. RAILWAY SYSTEM—THE *Pinang Gazette says:*

"Mr. H. Kelway Bamber, M. V. O, late head of the Rolling Stock Department of the East Indian Railway and now London representative to Messrs. the Leeds Forge Co., arrived in Penang on Nov. 25 and left next morning for Rangoon. He is making a study of the rolling stock requirements of present day traffic on the railways of India, Burmah, Malaya, and Ceylon. He is a brother of Mr. Kelway Bamber, the Ceylon agricultural expert. In conversation with a *Pinang Gazette* representative at the E. & O. Hotel, Mr. Bamber expressed himself as having been much struck by the smartness with which traffic is moved over the whole F. M. S. Railway system and also with the excellence of its modern coaching stock."

MINDANAO MILITARY RAILROAD.—General Edwards, Chief of the Bureau of Insular Affairs, in his report, has recommended the construction of this line which as proposed is to be built from Camp Overton to Marahui on Lake Lanao near Camp Keithly. It would be utilized primarily for carrying military supplies, but would prove an important factor in developing the country and putting the Moro in touch with markets for his products.

TECHOU-CHENGTING RAILWAY.—The *China Critic* announces that the German proposal to construct a line connecting these two points when the Northern Section of the Tientsin Pukow is completed has been approved by the Board of Communications. This line will connect the Peking Hankow and the Shantung lines.

BURMA RAILWAY SUPPLIES.—The contract for the supply of girders for 10 ten, 10 twenty, and 6 forty foot spans has been placed with the Tee Side Bridge and Engineering Works, Ltd., and an order for 24 water tanks and two meter gauge locomotive turntables has been placed with the Horshay Co., Ltd.

THE FUKIEN RAILWAY.—The Amoy correspondent of the *China Mail* writes that the railway has issued a new time table covering the 12 miles now operating and states that the work is being pushed forward up to the bank of the North River, another ten miles or so from Shih Bee, the present railhead. The embankments are nearly completed and many minor bridges and culverts are finished, and it is hoped that the line will be open right up to the river side by the end of the year or early in the new year. The final decision as to the future direction of the railway seems uncertain, whether to go direct to Chang-Chow-Fu by a bridge at this point, or whether to continue the line up the north bank of the river and cross at a point higher up where the river is narrower. This would be less costly and would necessitate a branch line to Chang-Chow-Fu. But if they could carry the line 1,000 miles farther along the river side to the City of Lung Yen Chow and tap the extensive coal mines up there, they would soon get remunerative returns for all their outlay. Another branch might also be made into the Ankhoe (An-Ki) county, a mountainous district full of precious metals.

To do all this far more capital is needed, and it is difficult to see how the company as at present constituted can possibly undertake so large a venture. Probably eventually the Government may have to step in and by means of a loan complete the undertaking. This is imperatively needed, soon, if the trade of Amoy is to be revived.

JAPANESE RAILWAY HOSPITALS.—Hospitals at Tokyo, Kobe and Moji for the care of railway employes are being contemplated by the Railway Board.

THE SHANGHAI-HANGCHOW NINGPO RAILWAY.—The *Shanghai Mercury* states that there is a rumor to the effect that at China New Year the Chinese Government contemplates taking over the Kiangsu section of the Shanghai-Hangchow-Ningpo Railway. This comprises about forty miles of the track from the Shanghai end, and while it is a comparatively small portion of the whole scheme this step would probably be a move in the direction of the salvation of the railway. At present work is proceeding slowly on the Hangchow-Ningpo section, the contractors being employed on about fifty miles of the way starting from Ningpo, and though the work has already been in progress some nine months nothing has been done except the embankments and a few small bridges. Between Ningpo and Hangchow a bridge of considerable size has to be constructed, but so far there is no word of a start being made upon it, and in view of the scarcity of funds which now exists it is likely that some development will have to take place in the situation before this can be tackled. In the native telegrams a few weeks ago it was reported that an attempt had been made to obtain the foreign loan for the railway, but this having proved abortive it is likely that the local Chinese authorities may find themselves at a dead stop before long. Though the statement that the Government is to take over part of the railway is still confined to rumour, it has gained considerable currency, and the hope is that it may lead to matters being placed upon a sounder footing.

PEKING RAILWAY SCHOOL.—This school has been established for over nine years and 350 students are accommodated. The staff comprises 32 teachers the majority of whom are Chinese graduates of foreign schools besides several foreign instructors.

THE SOUTH MANCHURIAN RAILWAY COMPANY.—The seventh half-yearly general meeting of the shareholders of the South Manchurian Railway Company was held at the Tokyo Chamber of Commerce, December 19. The chairman stated that the work of reconstruction of the Antuug-Mukden has made headway and the Antunghien-Chikuanshan section would be opened to traffic soon and that the gross profits for the term amounted to 632,000 odd yen, a decrease of about 1,000,000 yen against the previous term. The following is the statement submitted:

	yen.
Profits for the term	632,992
Balance brought forward from previous term	2,316,513
Total	2,949,505
Legal reserve	31,649
Dividend to the Government	500 000
Dividend to shareholders (6% per annum)	60,000
Speci l reserve	500,000
Bonus to officials and society expenses	54,000
Balance carried forward	1,803 855

BAIKAL-PEKING RAILWAY.—The *Frankfurter Zeitung* is responsible for the announcement that Russia and China propose constructing a line through the Gobi Desert to Peking. This line it is claimed will reduce the distance to Berlin to eight and one-half days or about 600 miles. According to this journal Russia will build the line from the lake to Kiatchka and the balance is to be built by Chinese, the whole to be completed by 1913.

THE KIANGSI RAILWAY.—A report from Kiukiang under date of December 25 states that traffic was expected inaugurated the following day between Kiukiang and Husngtomen, a distance of approximately 20 miles, and that construction trains are operating for a further distance of three miles.

(Continued to page 284)

exempt classes of Chinese seeking to enter or to leave the United States and also that the U. S. Marine Hospital surgeons in China and Hongkong shall have authority to issue final health certificates to intending emigrants from China to the United States."

In the discussion Dr. Fearn said: "Quite often a young man or woman who had every right to enter America went to the trouble and expense of going all the way to America, only to find upon arrival that they could not enter. Formerly Dr. Ransom had authority to issue certificates, but the speaker knew of a case where his certificate was not upheld by the authorities in San Francisco. This would appeal to anyone as being very unfair and unjust, and it was also very humiliating to men who were compelled to return."

Chinese, generally, may feel that the provisions of the Exclusion Act are too rigid, but it will not mend matters if their violation be encouraged. The only hope, however, is of more liberal legislation through better understanding based on sincere cooperation in an effort to make the best of this unpopular legislation that offers such a wide field for misunderstanding and friction.

THE MANILA CIGAR TRADE

Perhaps nowhere in the world has the cigar manufacturing industry advanced to the degree of perfection that has featured its development in the Philippine Islands. The reputation of the Manila cigar was established in Europe many years ago and this has been maintained with its high standard of excellence continuously up to the present writing.

Following American occupation an adjustment of the industry to meet changed conditions became necessary and while the domestic demand increased in large measure due to military occupation, up until the passage of the Payne Bill which provided limited free entry of cigars and cigarettes into the United States, the prospects for the industry were far from bright.

In the year ended June 30, 1909, there were exported 116,278,000 cigars and 53,614,000 cigarettes. The Payne Bill went into effect early in the fiscal year, 1910, with the result that at its close, 196,592,000 cigars were exported of which 83,931,000 went to the United States as against 2,696,000 in 1909, while the export to all foreign countries was practically maintained, the figures for 1909 being 113,582,000 and 1910, 112,661,000. This goes to prove that the reputation of and the demand for Manila cigars in foreign countries have been maintained after many years of trial and is especially appreciable as evidence of the high standard of excellence of the product. This should guarantee an increasing stable market in America under favorable trade conditions.

However, notwithstanding the enviable reputation abroad that the Manila cigar has enjoyed, a well organized campaign has been directed against its good name during the past six months by the predatory tobacco trust in the United States that practically controls the distribution of cigars and the cigar situation generally throughout that country. The methods employed are not very commendable since they are based on vicious misrepresentation designed to prejudice the cousumer and hamper the independent retailer by trade duress, the weapon of the Trust when other means fail. The ramifications of this almost perfect organization, now attempting to kill the sale of Manila cigars in the United States, are so extensive that the effect of their campaign is already being felt and unless some concerted effort is made by the Manila manufacturers to combat its influence the damage will be immeasurable.

The organization of the Manila Tobacco Association is a movement in the right direction. Through it, the export may be regulated so that at least one of the many weapons used by the enemy will be taken out of its hands, viz the opportunity of misrepresenting cheap and inferior cigars, manufactured by small Chinese factories, to the American consumer, as a Standard Manila Cigar.

Only by organizing and centralizing the control of export to the United States may this be accomplished and soon the members of the association would realize that in union there is real strength. Effort of individual interests directed against such a solid, effective organization as the enemy enjoys would prove futile. Inconsistencies and conflict in propaganda, among the well meaning Manila interests, could not be avoided working separately, and this would add to the confusion and ineffectiveness. This might be entirely eliminated by cooperation, by pulling together and carrying out a well ordered program.

Once organized and their efforts concentrated, the Association should not neglect a comprehensive publicity campaign in the United States. There should be a well directed advertising propaganda to interest the consumers on the one hand, and the jobbers and retailers on the other.

Had organization been effected and a publicity campaign inaugurated in anticipation of the malicious propaganda of the Trust, the situation would have been easily controlled, but now that the enemy has entrenched itself and will have to be routed out, greater effort and expense will necessarily be involved.

First organize to control the export and see that no inferior product is permitted to damn us, and that the American market is not glutted to the disgust of friendly retailers, start in on the publicity campaign simultaneously, have patience, pull together, and we believe that 1911 would yet prove a banner year. The very news that Manila cigar interests had consummated such an arrangement would be the most comforting news in the way of publicity that our friends in the United States could wish.

GOVERNOR GUERITZ OF BORNEO

After six years of activity in the advancing the interests of British North Borneo, His Excellency, E. P. Gueritz, takes a well-earned leave, and the expression of the high regard in which he and Mrs. Gueritz are held by all classes is evidenced by the many addresses presented to him on the eve of his departure, copies of which appeared in a recent number of the "British North Borneo Herald."

Governor Gueritz is the guardian of the most Eastern British frontier, and the progress made in the development of the wealth of this island empire is largely due to his initiative, sympathy and encouragement. We are well aware of the measure of neglect to which out of the way areas are subjected by the sovereign country, and British North Borneo is not an exception, but it is a matter of congratulation that the stalworth pioneers of British North Borneo have had for a Governor one who never faltered in his belief in Borneo's future and applied himself diligently to overcoming the impossible. Governor Gueritz will not be idle during his sojourn in England. He will be found spreading some of his enthusiasm about Borneo where it will do the most good.

FAR EASTERN RAILWAY NEWS

(Continued from page 278.)

KILIN-CHANGCHUN RAILWAY.—According to the *Japan Times* the prospect for early completion of this line is not so bright as former reports indicated, that only 15 miles from Changchun could be expected completed at the end of the year and states that the remainder will have to be carried over into next year, though work will be brought within 30 per cent. of completion before January. The delay is attributed to two causes. One is inclement weather; the other, diminution of the number of Chinese navvies employed, which diminution was effected by the Chinese contractors for the sake of economy. There are now about 600 navvies at work, and they will be reduced to one half when the extreme cold sets in. The 15th of the eleventh month, according to the Chinese almanack, is fixed for opening the 15-mile section, a date which corresponds to about the middle of December. It appears that a difficulty has arisen in connection with a question of boundaries. An American citizen owns a plot of land measuring 500 *tsubo*, through one corner of which the railway was planned to pass. This American not unnaturally refuses to sell a small bit of his land, the area being already of petty dimensions. But he asks 80,000 *yen* for the 500 *tsubo*, and that price is considered excessive. The plea advanced for such a demand is that the American citizen holds the plot as security for a loan of 90,000 *yen* made to its original Chinese owner. In the circumstances the Japanese Railway Authorities have decided to deflect the route so as to avoid passing through this land.

SUPPLY OF INDIAN RAILWAY MATERILS.—Popes, Electric Lamp Company, Limited, England, supplied 560 Incandesent Electric lamps to the East Indian Railway Electrical Department. The British Insulated and Helsby Cables, Limited, Prescot, Lancashiere, have supplied the same railway with a quantity of electric cables and accessories. Mssrs. Pritchetts and Gold, Limited, have an order for the supply of 600 accumulator cells to the East Indian Railway Electrical Department which will be shipped from England next month. The Burma Railway Company have ordered the consolidated Brake and Engineering Company, Limited, Londou, for the supply of Vacuum brake fittings. Messrs. W. Beardmore and Company, Limited, Glasgow, are supplying the Bengal-Nagpur Railway Company with steel wheels and axles for rolling stock. The Leeds Forge Company, Limited, Leeds, have an order for the supply of twenty open high-sided goods wagons on the Sheffield-Twinberrow principle or grid system, to the East Indian Railway, delivery at home to be completed next month. The South Indian Railway Company have placed an order with Messrs. The Gloucester Railway Carriage and Wagon Company for the supply of 18 sets of steel underframes and material for passenger carriage stock. The Patent Shaft and Axle Tree Company are also supplying them with 52 pairs of disc wheels and axles, and Messrs. Craven with 100 pairs of spoke wheels and axles. Messrs. Nasmyth Wilson and Company, Manchester, had a large order for locomotive boilers. Messrs. Orenstein and Arthur Koppel have an order from the Chief Engineer, Lower Ganges Bridge, to supply 110 of their standard double side tipping wagons, and 24 set of points and crossings.—*Railway and Shipping*.

THE ACKLEY BRAKE ENTERPRISE.—The Ackley Brake Company, New York City, represented in the Far East by Frank L. Strong, Manila; China General Engineering Co., Shanghai, China; and Sale & Frazar, Ltd., Tokyo, Yokohama, and Kobe, writes that the Havana Electric Railways, Havana, Cuba, have been supplied with 514 Ackley Adjustable Brakes, sufficient to equip all their cars. Several hundreds of Ackley Brakes have recently been placed with roads in China and Japan, and the Ackley brake is also well introduced throughout Australasia where the above company is represented by R. W. Cameron & Co. of Sydney, Melbourne and Wellington. The American licensors for the Ackley Brake have recently shipped an order to the Honolulu, (Hawaii), Rapid Transit Co., who has adopted the Ackley Brake as standard, and has already been supplied with 70 brakes.

An order for 50 Ackley brakes from the New York office of Sale & Frazar to be shipped to Japan, and additional orders from Australia are reported from New York.

Mr. Ackley sailed from New York for Buenos Aires on November 19, and is now in South America where he is placing agencies for his Brake.

FAR EASTERN RAILWAYS

BURMA RAILWAY SUPPLIES.—Two lathes supplied by Messrs. John Lang & Sons, Ltd., a combined welding and folding machine by the J. C. Nicholson Tool Co., Ltd, and a screen shaker by the Pneumatic Engineering Appliance Co., Ltd., have been installed by the Burma Railway Co. in their shops.

WINCHOW RAILWAY ENTERPRISE.—The construction of a railway from Fung Tauen on West River, approximately fifteen miles west of Wuchow, to Sai Waan has finally been arranged. The line will be constructed by the company operating rich coal mines at Sai Waan in the Hoh Ueu District.

INDIAN RAILWAY CONSTRUCTION.—The Bengal Chamber of Commerce has addressed the government on the subject of maintaining the annual capital expenditure so that it will not fall below an aggregate of £10,000,000 and if possible increase it to £12,500,000 in conformity with the conclusions of the Indian Railway Finance Committee that convened in London in 1907-08. The Chamber points to the fact that last year the amount expended fell below £10,000,000 and much greatly needed construction was delayed. Reference is also made to the prosperous condition of lines operating and the necessity of maintaining the lines so as to keep pace with the increased demands made upon them.

AMERICAN LOCOMOTIVES FOR JAPAN.—The Railway Board has placed an order with the American Locomotive Co., through the Mitsui Bussan Kaisha, for 24 Pacific engines and 6 Mallet of 0-4-0 C type loccmotives. The Pacific locomotives will have 18 5" by 24" cylinders with driving wheels of 63" diameter and total working weight of 133,000 pounds. The Mallet cylinders will be 15 5" and 24 5" by 24" with 63" drivers and a total working weight of 122,000 pounds.

FRENCH RAILWAY ACTIVITY.—Peking advices are to the effect that prominent French merchants have urged their government to promote the construction of an extension of the French line to Yunnan to connect with Szechuan for the purpose of tapping the Yangtze region, together with a line from Lungchow via Nanning to Wuchow to secure the traffic along the West River. It is also proposed that the construction of Yunnan Kueichon line should be built either by French or Chinese capital.

This activity is due to a desire to develop French interests and at the same time encourage traffic for the Yunnan Railway. Then there are the projects connecting Siam with Saigon which will connect with the Peninsular Railway. What measure of success will mark these extensive programs is difficult at present to determine.

THE FUKIEN RAILWAY.—This company which operates over twelve miles of its line connecting Sing Su and Shih Bee on the mainland and serving Amoy by means of a ferry have been giving a service of three trains daily each way since January 1.

JOHORE STATE RAILWAY.—The estimates of revenue for 1911 amount to $220,000 (Str. Cur.) compared with $159,414 for 1910 and $90,285 for 1909. The estimated expenditure for 1911 will reach $432,482 including $101,171 under the head of personal emoluments, other charges $330,088, and $45,730 for capital account. The officials anticipate an increase of 50% in traffic revenue this year and expect in a few years to put in on a paying basis.

SOUTH MANCHURIA RAILWAY LOAN.—This loan drawing 4.5% for £6,000,000 was sucessfully floated in London last month. The issue price was 98 and the bonds are redeemable in 25 years. Subscriptions were received by the Yokohama Specie Bank, the Hongkong & Shanghai Banking Corporation. It will be remembered that the company was organized with a capital of 200,000,000 yen, half of which represented the value of the railway as estimated by the Japanese Government and 20,000,000 yen was paid up and power to issue 80,000,000 in bonds conferred. This issue was made successfully, but an additional issue was considered necessary to provide for extensions and construction to keep pace with increased traffic not originally contemplated. The loan for 60,000,000 yen was authorized last year and we learn that of the proceeds 20,000,000 yen will be used to retire debentures and the 40,000,000 yen in doubling the line from Dairen to Sukiatun, in completing the Antung-Mukden reconstruction, in further developing the Tuchun mines and in completing the Dairen harbor improvement program.

THE TOKYO RAILWAY CO.—The following is the statement of the directors approved at the recent half yearly meeting:

	yen.
Net profits for the term	1,731,405
Balance brought over from previous term	23,324
Total	1,754,529
To reserve	86,570
To special reserve	88,430
Bonus to officials	35,000
Dividend to shareholders (7% per annum)	1,522,500
Balance carried forward	22,229

"During the last session a bill intended to accomplish this object was introduced in the Senate almost identical with a bill introduced during the Fifty-ninth Congress. It provides that the government of the Philippine Islands may make regulations, not in conflict with the provisions of the act of July 1, 1902, as amended, governing the number of mining claims that any person, corporation, or association may locate on the same vein or lode. It also provides, under similar regulations, for granting licenses for exploration and mining for gold and other minerals in the waters of the Philippine Islands, no exclusive licenses to be granted except as to limited or prescribed areas."

"There are a number of minerals in the Philippine Islands, some of which have been found in paying quantities. There has been much prospecting, but mining is largely a speculative matter, and, as the minerals there are found mainly in the wildest and most inaccessible parts, with no railroads or highways or means of communication with the outer world, development has been discouraged rather than eucouraged by the inducements offered.

"It is recommended that these amendments be enacted into law. It is believed that they will be of material benefit to the islands in the present, while properly safeguarding future interests."

BAGUIO DISTRICT.—The work of installation on the Headwaters continues and the success of this enterprise will measure the future investment of foreign capital in the development of that region. So far as can be learned, there is no reason to doubt the extent of the deposits, making a paying low grade proposition under experienced direction and economical administration. The Major Mines are in the same class as the Headwaters with respect to future promise and it will rest with those directly in charge of operations, whether these enterprises prove successful or not. In another column, Mr. Hanlon puts his finger on the weak spot in Philippine mining activity. In developing a prospect into a mine, the amount of money spent in securing qualified expert advice, is well invested in that it eliminates false estimates and failures due to inexperienced direction and haphazard pronouncements. Mine owners in the islands have ignored this great truth. The Philippines have suffered greatly from those who have posed as authorities on mines and mining and it is in such properties as the Headquarters, the Major Mines, the Bua Company and the Benguet Consolidated in Benguet and the Colorado Mining Company in Masbate, with proper direction that the mining men of the archipelago must look for confirmation of their faith in the future of the industry.

In all the reliable reports available on mineral deposits in the islands, there is not one that does not confirm the claim that rich values are to be found, and it is regrettable that with but the few instances referred to, the failures and disappointments have been due to most deplorable administration.

Consolidation in Benguet which must be rated generally as a low grade proposition, will solve the problem of administration. This will surely come, once there is realized substantial and permanent returns in the form of dividends, from any of these properties.

THE PARACALE DISTRICT.—We understand that the proposal to develop the Paracale Extension has fallen through for thepresent. The tests recently made were satisfactory and while the report of the expert did not read like a circus poster, or a wild cat prospectus, it demonstrated that with proper equipment suited to conditions, from ten to twenty per cent could be realized on capital invested with economic administration. The values exceeded thirty cents gold as a fair average, although some tests were much higher and wide margin of safety allowed. We have not learned the exact reason for postponing this development, but a desire among a few interested to cover capitalize is believed to be the nigger that refuses to leave the woodpile.

NUEVA ECIJA DISTRICT.—Testing continues on the Rio Chico property and a lease is being negotiated by Australian capital covering 640 acres of placer on the Marinat River which has yet to be proved up. This district is easily available by railway and water transportation and if the values are found satisfactory will prove a desirable field for dredging.

MINDANAO PLACERS.—In Iligan and Cagayan de Misamis there is some activity and we understand that Australian capital is interested in the development of several claims on the Manalgue River in Iligan. On the Eponan in Cagayan de Misamis development work is reported progressing favorably.

BAHAY VALLEY OIL CO.—At the regular annual meeting of this company which is interested in the Tayabas Oil Fields the following directors were chosen:

M. F. Loewenstein, Mauro Prieto, E. E. White, E. B. Bruce, L. E. Holden and R. C. Hosty.

THE GUAMAS GROUP.—After all the splurge about the new dredge being ordered in the United States for this rich property, we have been informed that the option given the exploration company has been forfeited.

THE UMARAI RIVER PLACER MINING SYNDICATE.—The first placer mining enterprise to enter the field on the East Coast of Luzon, lying along Dingalang Bay, has taken up claims on the Umarai River owned by an association the members of which are R. W. Squires, C. D. Squires, W. S. Boston, H Hardman, L. E. Perske and Theodoro Gubayedoff. The company is capitalized for £150,000 subscribed by European and British capital with headquarters at Sydney, Australia. It is understood that a dredge will be installed by the end of the year. The tests reported cover ten claims and represent paying values.

MUKDEN-ANTUNG CONSTRUCTION. — The railhead on the standard gauge is advancing rapidly from the Mukden and was expected to reach Penchihu, January 15. Tunnel work at Black Mine Pass has progressed to a point where the light line was transferred so as to run through it, January 1, thus saving three miles.

SHANGHAI-NANKING RAILWAY SHOPS.—The contract for the construction of sixteen passenger cars for the Tientsin-Pukow lines has been secured by this company. The order covers three first class, six second class, and ten third class.

TIENTSIN-PUKOW RAILWAY (Southern Section).—With little ostentation, the completion of temporary construction was announced January 20 and second and third class passenger traffic over the line to Linhsinkuan, a distance of 100 miles, was begun. Trains are also running from the North end of the section from Tsinanfu to Taianfu. The railhead from the south is being pushed forward beyond Hsuchoufo.

SUPPLY OF INDIAN RAILWAY MATERIAL.—According to *Railway and Shipping*, the Motherwell Bridge Company, Limited, North Britain, has an order from the South Indian Railway Company for the supply of bridge materials and bracing frames and the Workington Steel and Iron Company, Limited, for the supply of a large quantity of steel rails and steel fishplates. The Birmingham Railway Carriage and Wagon Company, Limited, have a large order from the South Indian Railway Company for the supply of spare buffer parts for rolling-stock and the Consolidated Brake and Engineering Company, Limited, Spencer House, London, E. C., for the supply of brake gear. Messrs. John Spencer and Sons, Limited, Newburn Steel Works, Newcastle-on Tyne, had a large order from the same railway for the supply of laminated bearing springs and Messrs. G. Salter and Company, Limited, for the supply of helical and volute springs for rolling stock. Messrs. Jessop and Company, Calcutta, have got the order of the North-Western State Railway for the supply of the iron and steel work which is required for the construction of the erecting shop in the new Locomotive Workshops at Lahore. Messrs. Alfred Herbert, Limited, Coventry, England, have an order from the Bengal-Nagpur Railway for the supply of a workshop sensitive radial drill and Messrs. Joshua Buckton and Company, Limited, Leeds, have a contract for the supply of a hydraulic wheel press. The Vacuum Brake Company, Limited, London, have an order from the East Indian Railway Company for the supply of five hundred sets of vacuum brake fittings and rigging, delivery to be completed by next month.

HUNAN RAILWAY CONSTRUCTION.—The section between Changsa and Chuchow is reported completed and passenger traffic will be inaugurated at an early date.

F. M. S. RAILWAY CHANGES.—The *Perak Pioneer* announces that the Division in charge of the Divisional Engineer North, F. M. S. Railway, has been extended from Tanjong Malin to Central Workshops including Batu Caves Branch Line, with effect from 1st January, 1911. This gives Mr. Frank Mills an additional mileage of about 57 miles. His two assistants, the District Railway Engineers, who are stationed at Taiping and Ipoh, Messrs. Johnson and Stephenson respectively, have also had their districts extended.

The Division of Mr. D. J. Highet, the Engineer in charge of the Southern Division, has also been considerably increased. The Government has not overlooked the fact that their work and responsibility have thereby been increased, and it has pleased the higher authorities to increase the maximum salary of their appointments by £120 per annum.

RAILWAYS CONTROLLED BY JAPAN.—Including lines in Formosa, Chosen, Manchuria the entire mileage is estimated at 7,000 miles approximately. In Chosen with the completion of the Seoul Wonsan and Honam lines the total expenditure there will reach 130,000,000 yen and it is the purpose to expend a similar amount before the plans proposed are completed. This will be represented by about 1200 miles of line. The reconstruction of the Seoul-Wiju line is expected completed in December this year and the bridge over the Yalu in March 1912.

ENGINEERING, CONSTRUCTION, FINANCIAL, AND COMMERCIAL NEWS

SIAMESE PALACE ILLUMINATION.—The new royal palace at Petchaburi is to be equipped with an electric light plant for illuminating the building and grounds. The contract which was let to Messrs. Howard Erskine, Ltd., is well under way.

KYUSHU HYDRO-ELECTRIC CO.—A new project is under way to utilize the waters of the Chikingo and the Yamakunig in the development of 140,000 h. p. for generating purposes and it is proposed to compete generally with the electric power plants, in Kyushu of which there are at present fifteen. The capital of the company is 8,000,000 yen. The cost of 1 h. p. has been estimated at 237 yen and the company proposes furnishing 10 c. p. lights at 50 sen per mo. as against 1.50 yen by the old companies.

BRITISH ALL RED WIRELESS —The following estimates are made available by Consul General James T. Dr. Bois of Singapore:

"The wireless stations necessary to connect the British possessions are only 20 in all. They would cost $5,000,000 to build and about $1,000,000 annually to operate.

"Stations would be required at Montreal, Glace Bay, and Vancouver, Canada; Hongkong; Singapore; Perth, Adelaide, and Sydney, Australia; Wellington, New Zealand; Gibraltar; Malta; Alexandria, Egypt; Aden; Bombay; Colombo; Mombasa, Durban, Cape Town, Bathurst, Sierra Leone, and St. Helena, Africa.

"The connections required would be: (1) Montreal, Canada, to Sydney, Australia, as follows: Montreal to Glace Bay, thence to Vancouver, Hongkong, Singapore, Perth, Adelaide, and Sydney. (2) England to Wellington, as follows: England to Gibraltar, thence to Malta, Alexandria, Aden, Bombay, Colombo, Singapore, Perth, Adelaide, Sydney, and Wellington. (3) England to China, by route 2 to Singapore, thence to Hongkong. (4) England to Africa, as follows: England to Gibraltar, thence to Aden, Mombasa, Durban, and Cape Town; or, England to Bathurst, thence to Sierra Leone, St. Helena, and Cape Town."

AVIATION WEEK IN BANGKOK.—The meet- following was postponed until the first week in February.

THE KEI HIN ELECTRIC RAILWAY.—The following is the statement of account and distribution for the half year:

	yen
Net gains..	77,806
Balance brought over from previous term	899
Total	78,705
This was distributed as follows:—	
To reserve	3,891
To special reserve	1,945
Bonus to officials	2,923
Dividend to shareholders (4% per annum)	60,700
Balance carried forward	446

SANNING RAILWAY LOAN.—This company has arranged with the Bank of Kwantung for a short loan of 300,000 Tls. at the rate of 9% per annum.

TELEFUNKEN IN THE PHILIPPINES —Messrs. Germann & Co., local agents for this company, have erected a wirelesss tation on the Luneta for the purpose of giving demonstrations with a view to entering into competition to instal an extensive system in the islands.

KIANGWAN AVIATION MEET.—A meeting was arranged for the first week in February at the International Race Course and special excursion trains from Shanghai were advertised.

HONGKONG AVIATION MEET ABANDONED — The arrangement with J. C. Mars, the American aviator, for a flight at Taipoo was abandoned on account of the indisposition of the government to permit a special excursion over the railway out of which the aviator would secure a percentage. The press expresses great disappointment.

PHILIPPINE AVIATORS EXPERIMENTING — After many discouragements the local Manila inventors are making substantial headway on their models. Some difficulty has been met in providing adequate power as the machines are of the heavier than air order.

HANKOW ELECTRIC LIGHT CO.—This company is reported to have concluded a loan of Tls. 1,200,000 with Japanese bankers.

BAGUIO HYDRO-ELECTRIC FRANCHISE.—The Philippine legislature has passed an act to provide for the granting of a franchise for the use of the waters of the Agno River in Benguet, for the generation of power for the maintenance of an electric light, heat, and power system and the supply of light, heat, and power in and to the city of Baguio. In lieu of taxes, etc., the successful bidder will be required to pay into the insular treasury a percentage of gross receipts.

BANGKOK LIGHTING.—The *Bangkok Times* announces that the Siam Electricity Co. is arranging to extend its lighting system and instal lights of 100 candle power on the main thoroughfares suspended on the poles of the trolley system. "This is a big improvement in street lighting," says the *Times*, "which has long been a reproach to Siam's capital."

WIRELESS USED BY TAAL RELIEF.—The enterprise of the U. S. Army in the Philippines was demonstrated by the establishment of wireless stations surrounding Lake Taal and connected with Fort McKinley, with field telephones, etc., under direction of the Signal Corps to keep the several U. S. Burial Corps detachments in touch with each other. It worked most effectively.

JAPAN'S TELEPHONE SYSTEM.—Statistics prepared by the *Chamber of Commerce Journal* of Yokohama on the 20th anniversary of the inauguration of the first telephone exchange in Japan show that over 30,000,000 yen represents the outlay of the government to date in this department with the result that 1,600 cities and towns in Japan are connected up with 126,000 subscribers. There are over 440,000 miles of wire. The annual revenue is yen 10,000,000. It is the purpose of the government to expend 18,000,000 yen during the next two years to accommodate 60,000 new applications now on file.

MANILA CARNIVAL ELECTRIC LIGHT TOWER.—There will be 48,000 lights massed on the 120 foot tower installed in the carnival grounds, Manila, besides a flash light service and illuminations covering the entire grounds and Luneta in the foreground.

FAR EASTERN RAILWAY NEWS

INDO-CHINA-SIAM CONNECTIONS.—The construction of the Saigon-Baltambang Railway and its extension to the Siamese frontier where it will ultimately connect with an extension from Petriew is the subject of much favorable comment in the Siamese press. The cost of the Indo-Chine project will be covered out of the loan of 100,000,000 francs projected by Governor General Klobukowski for public works. With the completion of the Indo-Chine and systems together with the Peninsular Railway all Malaysia will be put in touch with China by rail.

THE MEKLONG RAILWAY CO. Ltd.—The report of the directors for the year 1910 gives little information beyond the actual results in profits for the year. The gross income was Ticals 310,760.75 and the expenditure Ticals 109,846.89 showing a very low percentage of cost for operating. After allowing Ticals 63,660 for interest concession redemption and depreciation, Ticals 137,254.44 represented the net profit for the year. Including Ticals 10,382.45 forward from previous account there were Ticals 147,636.89 available and the following distribution was made:

The Directors propose to deal with this amount as follows:

(1)	To pay a dividend of 5%: Tcs.	111,500.00
(2)	To pay Directors' fees:	5,000.00
(3)	To pay Manager's bonus:	5 575 00
(4)	To place to Contingencies Fund:	9,000 00
(5)	To place to Statutory Reserve	6,333.97
(6)	To carry forward to next year:	10,227.92
	Tcs.	147,636.89

SUPPLY OF INDIAN RAILWAY MATERIAL.—Messrs. Geo. Cooper and Sons, Limited, England, have a large order for the supply of "French" screw spikes for permanent-way to the South Indian Railway. Messrs. Jas. Reid and Co., Ld , are supplying the same railway company with a quantity of fishbolts with nuts and washers for the construction of the Dharmapuri-Hosur extension. The Stanton Iron Works Company, Limited, had a contract for the supply of cast iron pipes and cocks to the South Indian Railway; and Messrs. Blakeborough and Sons, Limited, for pillar water cranes for the D. H. E. The materials required for the second track on the Delhi-Jumna Bridge and Allahabad-Jumna Bridge have all been ordered from England by the East Indian Railway. Messrs. Pope's Electric Lamp Company, Limited, England, have supplied the East Indian Railway with three thousand of their incandescent electric lamps. The General Electric Company, Limited, have also supplied the electric department of this railway with a quantity of their lamps, globes and shades. The Oilbath Axlebox Fittings and Engineering Company, Limited, England, had an order, from the Bengal-Nagpur Railway Company, for the supply of 100 of their axle-boxes and 2,000 axle-box covers. Messrs. John Spencer and Sons, Limited, are supplying the same railway with four crank axles for locomotive engines. Messrs. Geo. Cooper and Sons, Limited, have an order from this railway for the supply of 22 tons of fishbolts with nuts and washers, and 88½ half tons of "French" coach screws. The East Indian Railway Company have placed a large order with the Consolidated Brake and Engineering Company, Limited, London, for the supply of a number of vacuum-brake fittings.—*Railways and Shipping.*

Machinery to the Quartermaster's Department, will be received here until 11:00 a. m. March 24th, 1911, and then publicly opened. Information and blank forms furnished upon application. F. G. Hodgson. Assistant Quartermaster General, U. S. Army, Chief Quartermaster.

CHINKIANG MUNICIPAL COUNCIL.—(a) Erection of a Water Works plant for the purpose of providing the Concession and immediate suburbs with an adequate supply of water.

(b) Erection of a Water and Electric Light plant combined for the purpose of providing the Concession and immediate suburbs with an adequate supply of water and light.

Sealed tenders will be received by the undersigned not later than 4 o'clock p. m. on Thursday, March 30, 1911, and should be marked "Tender for 'Water Works' and or 'Water Works and Light Plant.'"

The Council does not bind itself to accept the lowest or any tender, or to pay any expenses which the contractor may incur in tendering. The contractor whose tender is eventually accepted will be required to give satisfactory security for the due performance of the contract.

PROPOSALS FOR HANDLING GOVERNMENT CARGO.—Headquarters Philippines Division, Officer of Chief Quartermaster, Manila, P. I., February 20, 1911. Sealed proposals, in triplicate, subject to the usual conditions for furnishing all Stevedores, Laborers, etc., necessary for handling Government Cargo offered by this department at Manila, P. I., during the fiscal year 1912, will be received here until 11:00 A. M., March 20, 1911, and then publicly opened. Blank forms and information furnished upon application. F. G. Hodgson. Assistant Quartermaster General, U. S. Army, Chief Quartermaster.

THE ANTUNG-MUKDEN RAILWAY.—The *Japan Mail* states that this railway has made progress some twenty per cent. in excess of what was estimated as feasible in the past year, so that it is expected to be running through by the end of this year, about six months before the completion originally contemplated. More than two-thirds of the great tunnelling work through the Fuchinlin Range has already been completed, a total of 1600 yards, leaving another 600 odd yards to finish the tunnel, which the Japanese have been drilling at the rate of four yards a day. Another tunnel, exceeding 1000 yards in length has progressed with equal rapidity and only a few hundred yards remain to complete it.

THE SUNNING RAILWAY.—Writing from Hongkong, Consul General Anderson calls attention to the prospect of the early completion of the extensions of this line to Yeunkong on the west, Kongmoon on the east and to Fatshan and says:

"I am informed by the president of the company, Mr. Chin Kee Hee, who was for 43 years engaged in railway construction work in the Pacific Northwest of the United States and had much to do with successful construction of some of the Northern Pacific Railway, that practically all the capital for the extension has been secured, largely from Chinese in the United States, and that the construction of the extensions will be pushed as heretofore. Incidentally it may be stated that orders for railway cars and materials have recently been placed by him in the United States.

"In some respects the Sunning Railway is the most promising line in all China. It was capitalized, planned, engineered, and constructed by Chinese, without any foreign help whatever. If it has technical faults and is not run altogether in accordance with foreign ideas, it is nevertheless an effective line, prosperous and well managed, so far as results can show, and is a standing example of what Chinese effort and Chinese talent will accomplish in China in the near future."

PAKNAM RAILWAY CO.,LTD.—The following report with recommendations of the directors for the half year ended December 31, 1910, was adopted at the regular meeting of the company:

	Ticals
Gross Receipts	73,970.31
Expenses	0,501.70
Leaving a profit for the half-year of	43,477.52
Added to the Contingencies Fund	100.co
	43,377.52
Balance from half-year ended 30th June 1910	2,666.47
Available for distribution	46,043.99

This amount your Directors recommend should be apportioned as follows:—

	Ticals
By paying a dividend of 6% absorbing	30,000.00
,, Depreciation	6,000.00
,, paying Directors' Fees	4,500.00
,, Compensation Acting Manager	1,750.00
,, paying Auditor's Fee	400.00
,, paying Manager's Bonus	500.00
,, paying Staff Bonus	500.00
,, carrying forward to next half year	2,393.99
	46,043.99

The total dividend rate for the year on new capital was 15% and on old capital 18.75%.

JAPAN'S STATE RAILWAYS.—From the last year 1904 05 previous to Nationalization, to 1909-1910 the total receipts have increased from 53,578,000 yen to 80,665,000 yen and the ratio of expense to receipts increased from 42.8% to 50%.

PLAGUE AND RAILWAY TRAFFIC.—The South Manchuria Railway has issued the following circular:

Since the outburst of the plague, necessary changes for the prevention of the epidemic have been adopted on our service.

The following is the actual state of the passenger traffic for the present on our line and also on the connecting lines:

3 Class Chinese Passengers.—3rd class Chinese passenger traffic has been totally suspended for the time being for both the North and South bound trains.

1ST AND 2ND CLASS CHINESE PASSENGERS. No Chinese passengers are allowed to travel on our Express trains excepting such 1st class passengers as specially granted by the Traffic Manager. 1st class Chinese passengers travelling through from Europe are dealt with the same as those specially granted by the Traffic Manager and are allowed to take our connecting Express trains on other trains than Expresses. 1st and 2nd class Chinese passengers may travel but on separate cars and only when they obtain special permission of the Station Master concerned.

Mukden Antung Line.—1st class Chinese passengers are carried, should they be allowed by the Station Master.

Korea Railway.—All passengers from China are subjected to five days' detention at New Wiju.

Imperial Railways of N. C.—Passenger traffic from Mukden to Peking has been totally suspended, the traffic for the opposite direction remaining as usual.

Chinese Eastern Railway.—The Russian Railway has suspended 3rd and 4th class passenger traffic.

PASSENGER COACHES BUILT BY THE HONGKONG & WHAMPOA DOCK CO., LTD., FOR THE BRITISH SECTION OF THE KOWLOON-CANTON RAILWAY

Name of Dock or Slip.	Length on Keel Blocks.	Entrance Breadth.	Depth over Sill at ordinary Spring Tides.	Rise of Tide. Spgs.	Rise of Tide. Neaps.
	Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*
"Kowloon."					
No. 1 Dock	700	86 ft. top 70 bottom	30	7′ 6″	3
No. 2 Dock	371	74	18′ 6″	7′ 6″	. .
No. 3 Dock	264	49′ 3″	14	7′ 6″	. .
No. 1 Pat. Slip	240	60	14	7′ 6″	. .
No. 2 Pat. Slip	220	60	12	7′ 6″	. .
"Tai-Kok-Tsui."					
Cosmopolitan Dock	466	85′ 6″	20	7′ 6″	. .
"Aberdeen."					
Hope Dock	430	84	23	7′ 6″	. .
Lamont Dock	333	64	16	7′ 6″	. .

The principal works are at Hunghom on the Kowloon side of the Harbour, distant about two miles from the City of Victoria, and among some of its chief points of interest may be mentioned:—

Machine Fitting and Erecting Shop—Three Bays, each 272′ 0″×52′ 0″, containing together two 10-ton electric overhead travelling cranes, one of 15-tons and two of 20-tons. The shop is equipped with a complete plant of up-to-date high speed machine tools of every description capable of turning out work of the heaviest class with expedition. Among the principal tools may be mentioned the following: *Longest Lathe* can take 75′ 0″ between centres, height of centres from top of shears 27″, motor driven.

Largest Chuck Lathe can take 10′ 0″ diameter in chuck, motor driven.

Lathe for heavy turning with high speed tools can take 21′ 0″ between centres; height of centres 21″ motor driven.

Largest Planing Machine, 8 feet between housings, can clear 8′ 0″ high from table, length of stroke 20′ 0″ motor driven.

Largest Milling Machine, can machine 5′ 0″ above table, width between housings 5′ 0″. Table 12′ 0″×5′ 0″, traverse of table 12′ 0″.

Largest Slotting Machine, 27 inches stroke, motor driven.

Wall Planer, to plane 12′ 0″ vertically and 12′ 0″ horizontally, motor driven.

Largest Boring Machine, suitable for cylinders up to 5′ 0″ diameter by 9′ 0″ long.

Boiler Shop.—One Bay 262′ 0″×62′ 0″ contains one 30-ton overhead electric travelling crane and one hydraulic rivetter.

One Bay 262′ 0″×42′ 0″ contains one 40-ton overhead electric travelling crane and one 10-ton overhead rope driven crane with one largest size hydraulic rivetter, drilling and screwing machines, etc.

Boiler Shop Smithy.—Two Bays, each 121′ 0″×30′ 0″ containing 28 fires and two 8-cwt. steam hammers.

Shipyard and Boiler Shop Machine Shed.—This shed comprises four bays, each 262′ 0″ × 30′ 0″, containing punching and shearing machines, light and heavy rolls, machine for rolling angle frames, plate edge planes, drilling machines, hydraulic flanging press, hydraulic manhole punch, hydraulic keel plate bender, hand overhead cranes, emery wheels, grindstones, etc.; also one bay 209′ 0″×56′ 0″ containing angle bar cutting machine and punch and 17 angle smith's fires and one bay 139′ 0″ × 42′ 0″ containing large rolls suitable for plates 30′ 0″ wide, and overhead hand cranes.

The ship building yard which adjoins has a frontage of 570 feet and will admit of ships 500 feet in length being laid down. The position is well protected, and there is deep water for launching ships with safety.

Blacksmith Shop.—This department comprises three bays, each 195′ 0″×50′ 0″ containing 48 ordinary smith's fires, one furnace for 1-ton hammer, six 8-cwt. steam hammers, one 1-ton steam hammer, four bolt, nut and rivet making machines and furnaces, radial drills, screwing machines, etc

Forge.—160′ 0″×82′ 0″ with three furnaces, one to suit each size steam hammer. The largest hammer is 10 tons, suitable for heaviest marine shafting work, etc., and there are two 2-ton hammers with steam cranes to each. There are two open hearth smith's fires. The company can handle and make forgings up to 20 tons, the largest propeller shaft forged being about 10 tons and the heaviest stern frame, about 8 tons.

Foundry.—This department comprises one bay 54′ 0″×43′ 0″, three cupolas for cast iron, 3 steam cranes, and one 2-ton air furnace for brass.

One bay 48′ 0″×43′ 0″ with brass furnace, white metal furnace, overhead cranes, etc.

One bay 60′ 0″×57′ 0″ with one 10-ton steam crane, gear wheel moulding machine, oil furnace for melting brass, etc., capacity 500 lbs.

The largest cylinder cast is 10 tons, the largest propeller 18′ 0″ diameter, 8 tons, cast iron, the heaviest bronze propeller blades 3½ tons each and the longest liner cast, 25′ 0″ in one length.

The heaviest casting turned out is an anvil block for 10-ton steam hammer representing 100 tons of cast iron.

The greatest monthly output was 130 tons cast iron and 7 tons brass.

Sawmill and Joiner Shop.—The sawmill and joiner shop is completely equipped with a large plant of all descriptions of steam driven saws and wood working tools of most modern and improved design.

The extensive carpenter shops and boat building sheds adjoin the saw mill.

Steam Shears.—Powerful steam shears 80 feet high and capable of lifting 75 ons, stand on a granite wharf with deep watertfrontage.

Railway Lines are laid throughout the yard to the various departments enabling gear and materials to be transported with convenience and expedition.

Electric Light is installed in all the shops, the yard and around the docks, admitting of work on ships being carried on at night. Current can be supplied to ships lying in dock or alongside.

The Galvanizing Plant by electrical deposit is of the most improved type and is capable of taking plates 20′ 0″×9′ 0″.

The Company's *Stores* carry a heavy stock of all descriptions of steel, iron, and timber for shipbuilding or repairing, engine and boiler fittings, etc., all of the best quality, which are supplied at reasonable rates and delivered with despatch.

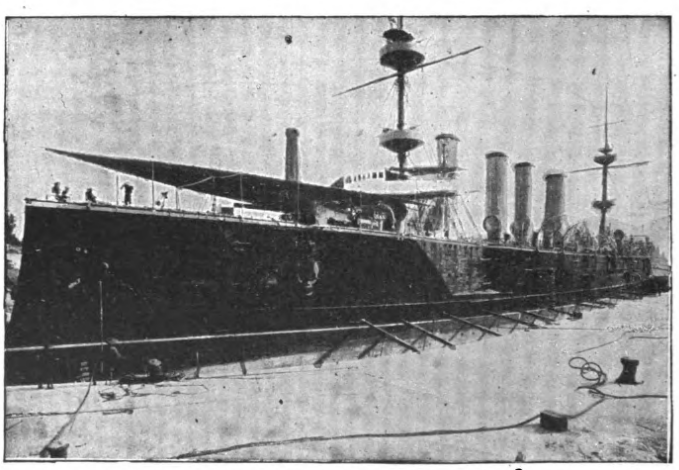
Compressed Air Plant.—The works are equipped with a complete installation of compressed air tools in the way of rivetters, hammers, drills, chippers, etc.

Salvage Steamer.—The twin screw salvage steamer *David Gillies* is fully equipped with a complete plant of powerful salvage gear and tools and on call can be despatched at a moment's notice. In addition, the Company has on hand a number of large and small centrifugal wrecking pumps, diving gear and other salvage appliances, all in readiness for shipment without delay.

Steam Launches.—The company's large fleet of fine steam launches is always in readiness to attend on ships in the harbour, for conveyance of workmen, material, etc.

Cosmopolitan Dock.—The Cosmopolitan Dock is also on the Kowloon side of the harbor and is situated at Tai-Kok-Tsui in a well sheltered position and distant about two miles from Victoria. The dock, which is built of granite, can accommodate ships up to 450′0″×53′0″×21′0″ draft. The workshops possess every facility and appliance necessary for efficient and prompt repairs to ships or machinery.

Aberdeen Docks.—The Aberdeen Docks are situated at the head of an inlet on the South



H. M. S. POWERFUL IN NO. 1 DOCK, KOWLOON.

CHINA'S RAILWAY TANGLE

Now that the currency loan negotiations have been brought to a successful termination, China has time to turn her attention to the perplexing railway problem which confronts the country through the opposition of the provinces to the application of such foreign loans as are manipulated through the central authorities at Peking. Until this question of authority is definitely settled, railway development will continue at a stand still, and progress be delayed. The crux of the situation lies in the provinces of Hunan and Hupeh where the gentry have openly threatened to revolt if the foreign Hukwang loan is applied to the construction of the Canton-Hankow-Szechuen lines.

Public opinion, in Hunan especially, is unanimous on the point of building their portion of the southern trunk line with their own funds, and heroic measures are apparently being taken to raise the necessary annual allotment on the shares to carry on the construction. But the funds are slow in materializing, and with the waste and extravagance and judging from the progress made to date, only a small portion seems to be expended in actual construction work. However, the Hunanese are supremely satisfied and elated over their success in thwarting the use of foreign funds, and hold their heads high as great patriots whose example should be followed by all other provinces. And in the face of such opposition the Central Government at Peking seems powerless to impose its will. Events are moving rapidly in China, and the signs of the times point to troublous days for the Empire in the near future, and further humiliation seems inevitable unless the government is prepared to preserve its prestige by a show of force at the critical moment. The Throne has compelled the Viceroys and Governors to recognize the Central authority over the new army, the command of which is now firmly under the Minister of War. Millions are annually expended in the feverish haste to organize and perfect the 36 new army divisions, and the provinces have recognized the urgency of this step, and are readily contributing every support to the new military program. On all sides China is having troubles with her neighbors: Russia on the North, Japan on the Yalu, France and Great Britain in Yunnan have all raised issues with China over the boundaries, and China in her defenseless state must always yield the point. Revolutionary societies in the South are a constant menace to the peace of the Empire, and a resolute leader could readily set up the standard of revolt, secure in the knowledge that lack of transportation with the North would facilitate his campaign and chances of success. When the hour strikes for China to mobilize her new army at any given point, the lack of transportation will impossibilitate the movement, and humiliation again will be her lot. The high spirited, proud and patriotic Hunanese whose stiff necked prejudice prevents the linking together of North and South, will then go down in Chinese history and be execrated by their countrymen as the real cause of defeat. The safety of the Empire demands the construction of this line without delay, and it would be far better for the Imperial authorities to brave the threatened revolt at once, than continue to jeopardize the integrity of the country by further parleying with the misguided patriots of H nan.

If the Throne had the power to centralize the command of the new army under the Ministry of War, for the best interests of the Empire, identical urgent reasons of State demand that the same policy be adopted with regard to the railways, as without the latter the army is helpless, and the huge sums expended in its creation and organization will be wasted. Either the Hunanese should immediately give sufficient guaranties of their ability to construct this line without further delay, or the Imperial Government should assert its prerogatives and proceed to build it, by force if necessary.

And the same argument holds good with other provincial lines, whose promoters are obstructing the progress and safety of the Empire through mistaken ideas of provincial rights.

H. E. WU TING-FANG,

RECENT MINISTER TO AMERICA. IT IS RUMORED THAT HE WILL BE CALLED TO TAKE THE POST OF JUNIOR PRESIDENT OF THE BOARD OF FOREIGN AFFAIRS.

H. E. LIANG SHIH-YI

DIRECTOR GENERAL OF RAILWAYS, REMOVED FROM OFFICE AND THE POST ABOLISHED BY THE NEW PRESIDENT OF THE BOARD

TAOTAI K. Y. KWONG

FORMER CHIEF ENGINEER OF THE CANTON-HANKOW LINE, TRANSFERRED TO DIRECT THE CONSTRUCTION OF THE KAIFENG-HAICHOW RAILWAY. EDUCATED IN AMERICA

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cance of the move was made apparent to the high Chinese authorities, and the negotiations then settled down to a discussion of minor points for the guarantee and supervision of the loan.

The final agreement stipulates that the revenues on tobacco, spirits, produce and the consumption tax in Manchuria, amounting to Tls. 2,500,000 and the salt surtax of all the provinces of China, amounting to Tls. 2,500,000 are pledged as security for the loan. And the neutralization scheme of the American Secretary of State, which was rejected by Russia and Japan and ridiculed and condemned by Europe, has been recognized and accepted in a modified form. Instead of America alone assuming the responsibility for the neutrality of Manchuria, Great Britain, France and Germany are now equally interested with her in this province, and the sphere of influence tendency has received another setback by the hypothecation of revenue from all the provinces.

It is natural that the terms of the loan should call forth sharp criticisms from the jingoistic Japanese press, who profess to see in the hypothecation of the Manchurian revenues a menace to their trade and political expansion in their peculiar sphere of influence. There is, however, little danger of foreign interference in Manchuria, while the revenues of the province are sufficient to meet the interest. So long as Manchuria is permitted to peacefully develop its enormous natural resources, its wealth and revenues will increase by leaps and bounds, and the occasion will never arise to justify foreign control of the revenues as a safeguard for the bondholders. The real menace to the prosperity and progress of this rich territory lies in the possibility of a conflict arising out of the ambitions of Russia to retrieve her defeat. If Japan's oft repeated declarations of friendship for China are sincere, and she harbors no designs on China's territory or sovereign rights, the Island Empire has every reason to feel well satisfied with the creation of a situation which effectively ties Russia's hands, and creates a buffer state between the Amur and the Yalu. The neutrality of Manchuria, which seemed such an idle dream, is brought within the realms of reality, and with this as an accomplished fact, the peace of the East is assured.

—G. B. R.

IMPERIAL KIRIN-CHANGCHUN RAILWAY

The Kirin-Changchun Railway, which, when completed, will traverse one of the most prosperous sections of Manchuria, is approximately 85 miles in length according to survey and last month 35 miles were opened to construction train traffic connecting Changchun with Yingchengtsu, while construction is well along on the Kirin end.

In December last year the announcement was made that the line would be opened for passenger and freight traffic from Changchun to Coran by construction trains a distance of about 15 miles. The inauguration of the section was celebrated at Changchun on December 5, 1910, by a general reception. The local authorities, gentry, and Japanese and Russian officials, with a number of foreign prominent merchants in Southern Manchuria were invited to be present. Tea and refreshments were served by the staff of the Railway. Addresses were given by the Director-General and the Engineer-in-Chief.

The Director-General said:—"Gentlemen—I am very glad to express my pleasure in having you with us today to witness the opening ceremony of running trains of the Kirin Changchun Railway in spite of it being such an extremely cold day. I also wish to express my sincere gratitude to you for your favors often shown me since I was appointed by the Board of Communications in the 10th Moon (December 1909) of last year to take over the directorship of this administration.

"Now let me submit you a brief report on our work here. During the 11th Moon (January 1910) of last year, our Engineer-in-Chief and I made a careful survey for this line when there was tremendously heavy snow about several feet deep, which caused a great deal of trouble to our work. But in the following month we got our staff to continue the measurement in spite of the hindrance of snow and ice on our way. But the 4th Moon (May 1910) of this year as soon as the snow and ice were melting away we began to have the embankment built without delay. But owing to the continuous rains in the last three months (viz. the 6th, 7th, and 8th Moon of this year) the work was greatly interrupted. Fortunately through the efforts and diligence of every member of the whole staff, the section of the embankment from Changchun to Tumenling, about 140 li long (44 miles), has just been completed. As to the other section of the embankment about 120 li (40 miles) long ness in being present." The Engineer-in-Chief (a Japanese gentleman) said:—

"I—The result of general work.

"I have nothing to say except a short report on the work which has been trusted in my charge. The distance of the main line from here Kalunkah is 13 miles and from Toutaoleo, 15 miles. The highest part of the embankment is 26 feet and the deepest part of the trenches is 16 feet. As to the construction of the turn-outs, switches, etc., all is built satisfactorily. Now I wish to tell you that the importance of the construction is to have the road built as soon as possible for the convenience of conveying the materials for the building purpose, then the work will be easily carried on with more success. At the present time, the stations and other buildings have not yet been put up in good shape as you have already witnessed.

"II—The diligence of the Director-General.

"On the 2nd day of the 12th Moon of last year when the weather was much colder than it is now, the Director although he was then very ill, went with me to survey the line of this road in spite of the heavy snow on the way. Now I am sure the success of the contruction is insured by his hard work which I believe is appreciated by you all.

"III—The faithfulness of the staff

"As the Director-General has been so diligent all the time, the whole staff are also willing to work hard. Now I am very glad to say way as soon as possible and that you will continue to do us favours as you have ever done before."

from Kirin, the work has been also nearly done. As all the materials have already been o tained, we are hoping that by the first two months of next year the rails will be laid as far as to Tumenling through Yihmah-ho, but at present, only a short section of 50 li (16 miles) between here and Kalunkah has been completed. So that by the first day of next Moon (January 1911) the construction trains will begin to run and at the same time we hope we will be able to provide accommodation for the passengers and to carry cargoes in the same trains.

"I am sorry that you are greatly disappointed today by coming over here to see such incomplete work as the stations. Cars and other facilities have not yet been put into good working order.

"On behalf of the staff of the railway, I, as a Director-General wish to drink your health and thank you heartily for your kind-

that the result of having the whole line of embankment built up, and the construction trains begun to run as far as Kalunkah is due to both the diligence of the Director-General and the faithfulness of the whole staff.

"IV—Chinese and foreign interests.

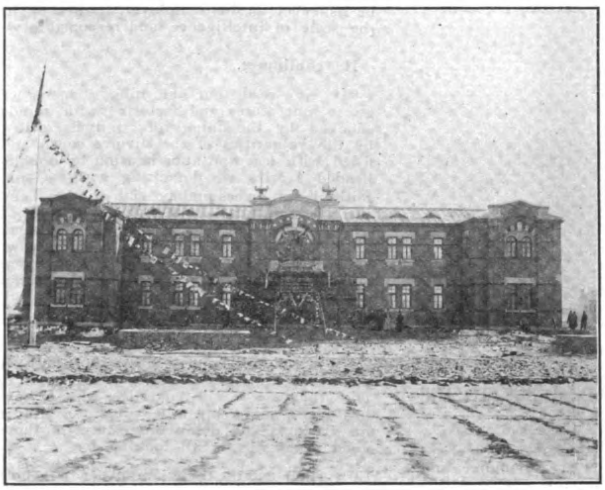
"I also wish to say that the success of this undertaking is not only dependent upon the hard work of the staff but also of the help of well-wishers of different foreign countries. With this in view I wish to thank you for your kindness before the large audience of our guests.

"V—Good feeling from the Southern Manchurian Railway Society.

"I also wish to thank the Southern Manchurian Railway Society for its sincere sympathy with our work.

"VI—The future hope.

"I hope that we will do our utmost in bringing about the completion of this rail-



ADMINISTRATION BUILDING AND STATION AT CHANGCHUN

A FIRST CLASS STATION

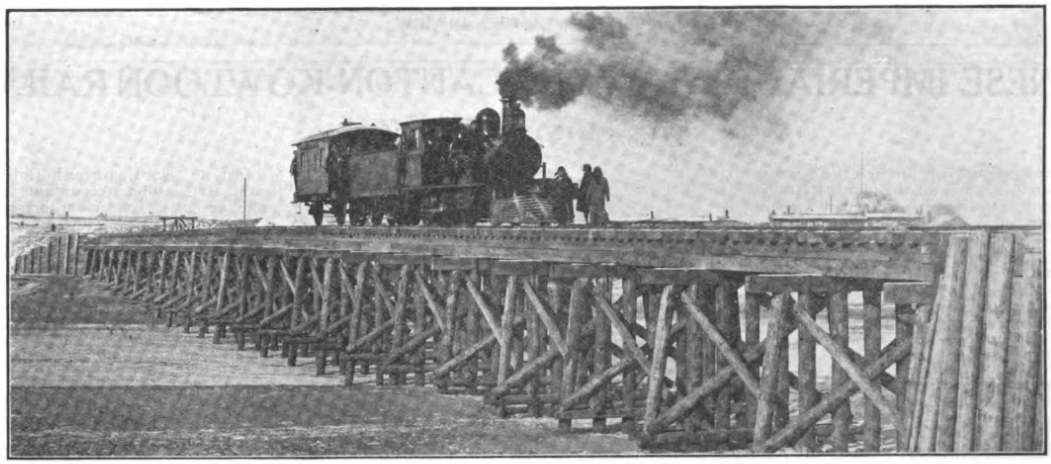
IMPERIAL KIRIN-CHNGCHUN RAILWAY

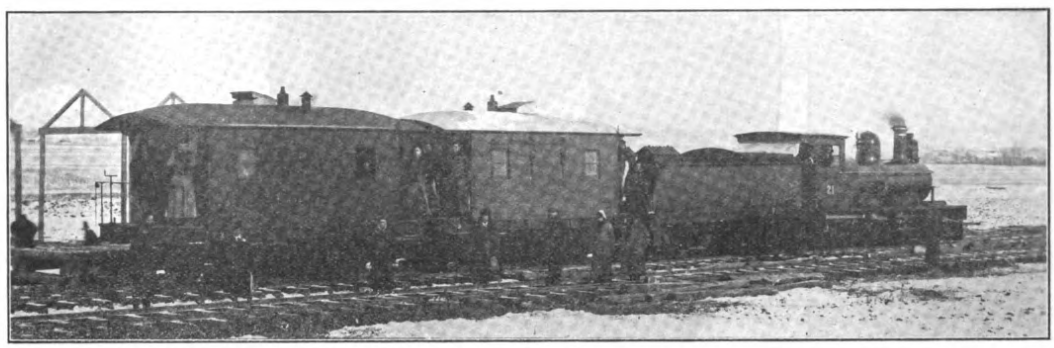
The first locomotive put in commission on this line was built in the shops of the Imperial Railways of North China. The Hanyang Iron Works have the contract for supplying all the rails. The most difficult engineering work on the line has reference to two large bridges and one tunnel, upon which work is progressing most favorably. Indeed, great activity has featured this railway construction throughout there being no suspension of work during the winter months. The bridges will all be of steel or reinforced concrete with the exception of temporary structures where large permanent bridges are being built so as to expedite the opening of general traffic.

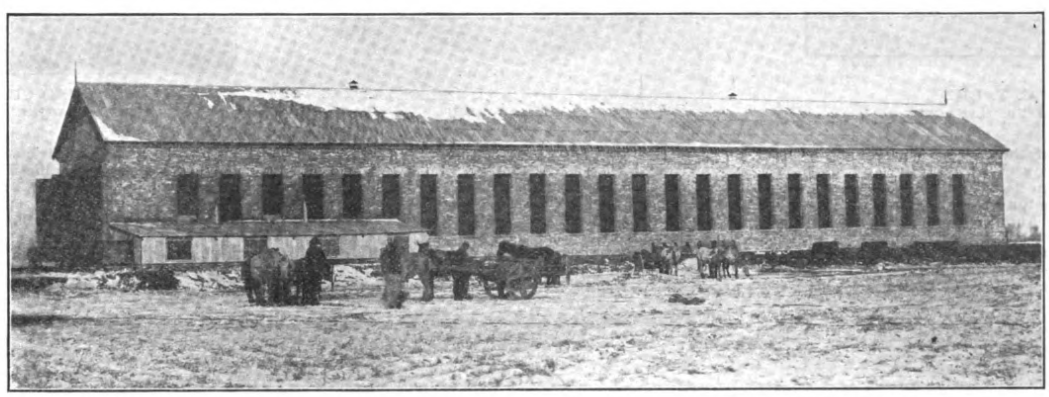
It is expected that the line will be completed by November this year.

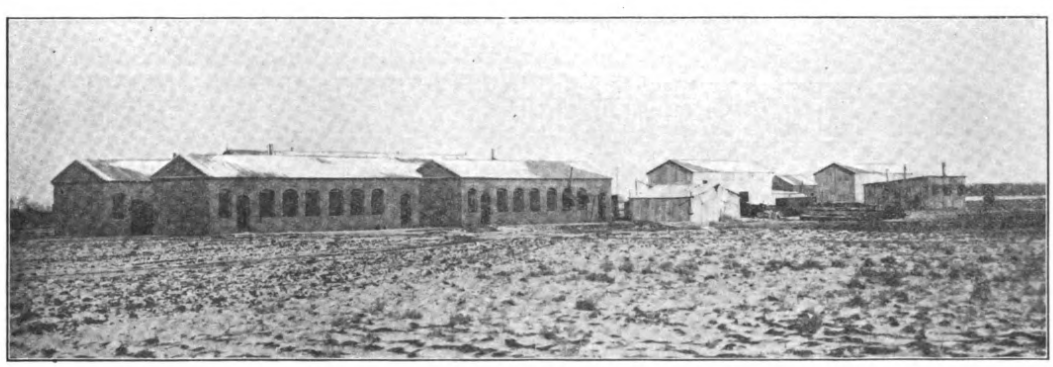
The Kirin Changchun Railway is financed by Japanese and Chinese capital. Under an agreement entered into between the South Manchuria Railway and the Chinese authorities the former agreed in August, 1909, to loan the latter half the capital necessary to construct the line. The total capital required was estimated at Tls 4,300,000 of which half was paid over to the Kirin-Changchun Company in September, 1909. The Yokohama Specie Bank was named repository for the funds of the railway. The loan bears interest at the rate of 5%.

The agreement provided that the Engineer-in-chief and the Chief Accountant should be Japanese, that the agreement should continue in force for 25 years and the railway be operated by Chinese and Japanese jointly.



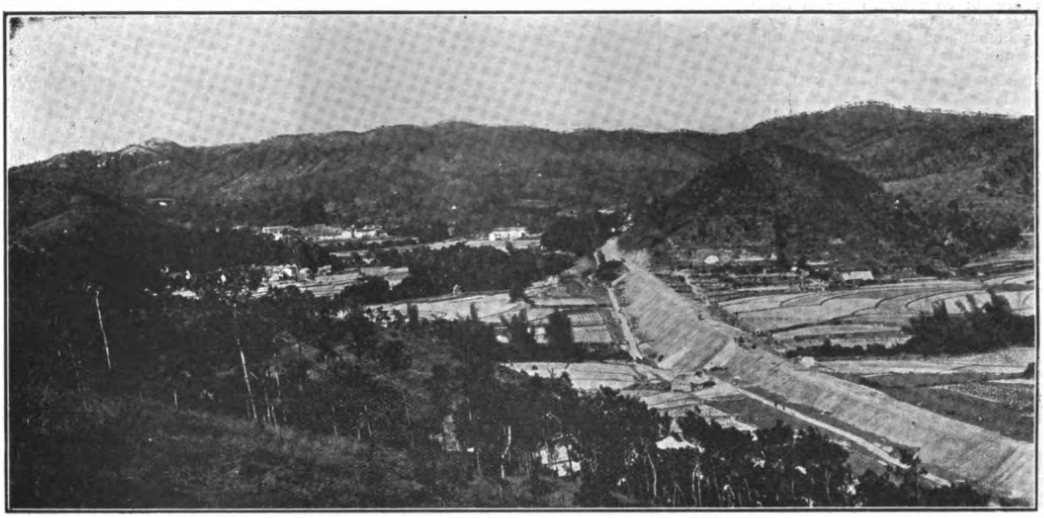






VIEWS OF THE KIRIN-CHANGCHUN RAILWAY

TEMPORARY WOODEN TRESTLE AT CHANGCHUN. CONSTRUCTION TRAIN. LOCOMOTIVE SHED AT CHANGCHUN. STOREHOUSES AT CHANGCHUN



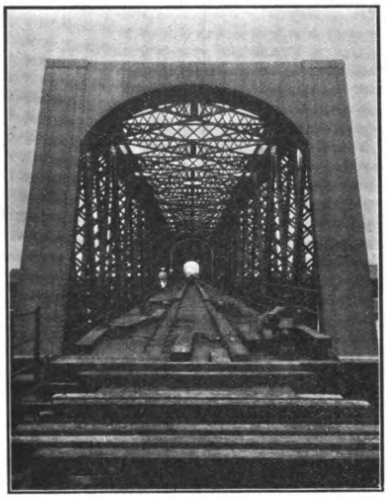
MILE 83, LOOKING NORTH, CANTON-KOWLOON RAILWAY.

While this Railway does not rank as China's most difficult engineering work up to the present, there are works of magnitude and some considerable engineering interest.

In the early days of promotion of the scheme, a length of 100 miles, more or less, was anticipated and that this could be reduced to 89¼ miles is satisfactory. Tunnels have been avoided though there are heavy earthworks from Mile 58 to Mile 85 through hilly and mountainous country, and in the lowlying portions there are some 10 miles of high embankment necessitated by the very high flood levels.

Besides an interesting route through the hilly portions, already indicated, the feature of this railway which calls for special comment is a series of large bridges in the East River Valley which is crossed between Mile 32 and Mile 41. In these nine miles, the following bridges have already been, or will very shortly be, completed, and we are enabled to give photographs of some of these interesting works.

Sien Tsun River Bridge		5 spans 60 feet Skew.
Shek Ha	do.	3 spans 60 feet.
Shek Tan	do.	3 spans 100 feet, 2, 60 feet.
Pek Kong	do.	4 spans 60 feet.
Kan Sui	do.	3 spans 100 feet.
Sheklung, East	do.	3 spans 224 feet, 2, 60 feet.
Tung Kun	do.	4 spans 224 feet, 2, 60 feet.



VIEW THROUGH THE GIRDERS OF THE EAST RIVER BRIDGE ON THE CANTON-KOWLOON RY.

The method adopted for the erection of the 224 feet span girders is unusual in this part of the world and indeed has been elsewhere seldom attempted on so large a scale. Five spans have already been floated out at bed stone level on pontoons specially built with deck staging for the purpose. The weight of each span when floated out is 330 tons and the erection and riveting has taken place on shore near launching jetties. The final floating out and seating of each span only occupies a few hours. The piers of the larger bridges are founded upon caissons encased as to the lower portion in steel, sunk to a sufficient depth by open dredging and finally plugged with concrete.

The ruling grade of the line is 1 in 150 and this grade is almost entirely confined to the hill section, which remark also applies to the sharpest curvature, viz: 3 degrees.

Tangents are long throughout the more level portions of line and therefore a satisfactory through train speed should be maintained without difficulty.

Steel Rails 85 lbs per yard have been supplied by the Hanyang Iron & Steel Works, Hanyang, near Hankow, also fastenings with the exception of fish bolts, and the quality, as proved by analysis and physical tests, is up to a high standard.

THE OPENING TRAIN AT TAI SHA TOU STATION (CANTON) ON THE CHINESE SECTION

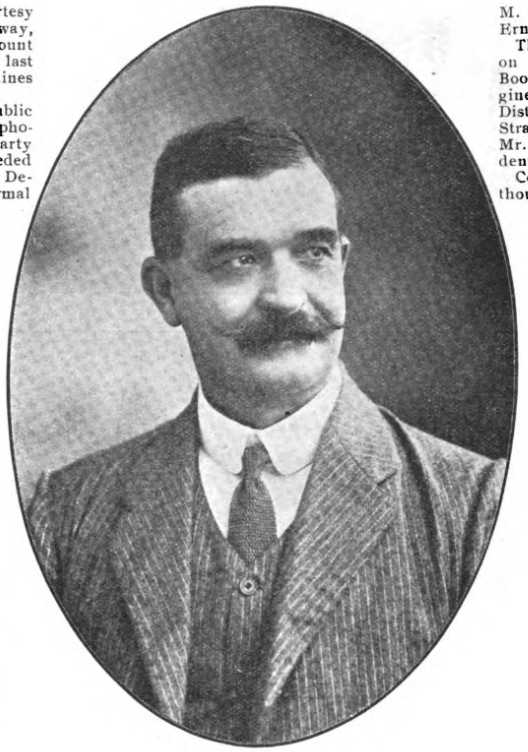
CHINESE IMPERIAL RAILWAYS.--CANTON-KOWLOON RAILWAY

THE CHINESE SECTION

We are now enabled, through the courtesy of the Administration of the above Railway, to present to our readers a detailed account with illustrations of this, one of the last railways, to join the revenue earning lines of China.

A section of 29 miles was opened to public traffic on December 6th, 1910, and the photographs show the ceremonial train and party of Chinese and foreigners which proceeded to Tong Mei (Mile 24) from Canton on December 5th, the occasion being the formal opening of this section by His Excellency The Viceroy of the Kwang Tung provinces.

C. T. LIU,
TRAFFIC MANAGER



FRANK GROVE, M. I. C. E.
ENGINEER-IN-CHIEF

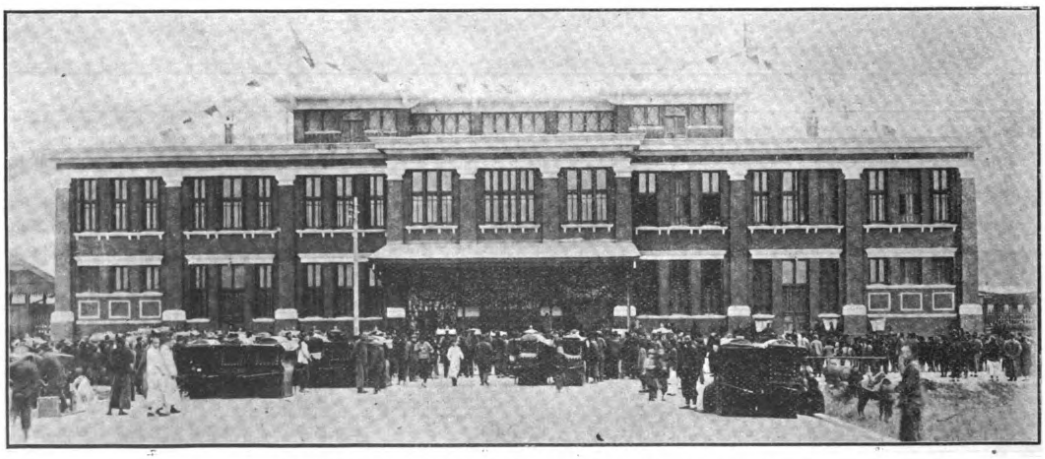
TAOTAI CHAO CHING-HUA
ACTING MANAGING DIRECTOR

The total length of the Chinese Section of the Canton-Kowloon Railway is 89½ miles; the Loan Agreement for its construction was signed in March 1907 by the British & Chinese Corporation and the Imperial Chinese Authorities; the detailed survey was commenced in August of that year, while construction was commenced in certain sections where land had been purchased, in June of 1908.

The local administration of the railway is placed by the Loan Agreement in the hands of a Chinese Managing Director associated with a British Engineer-in-Chief and a Chief Accountant, and these positions are at the present time filled by Mr. Chao Ching Hua, Acting Managing Director, Mr. Frank Grove, M. Inst. C. E., Engineer-in-Chief, and Mr. Ernest Hall, Chief Accountant.

The executive officers at present engaged on the line are as follows: Mr. B. T. B. Boothby, Assoc. M. Inst. C. E., District Engineer, No. 2 District; Mr. W. G. Moore, District Engineer, No. 3 District; Mr. W. M. Stratton, Maintenance Engineer, Tai Sha Tou; Mr. J. J. Thompson, Locomotive Superintendent, and Mr. C. T. Liu, Traffic Manager.

Construction work has proceeded steadily, though many troubles caused by native opposition in the country districts occurred in the early days of land purchase and of the commencement of actual works. Eventually, however, with more vigorous measures on the part of the Chinese authorities, and much patience and care on the part of the foreign engineers, a better time came and more rapid progress was attained, especially in the past year.



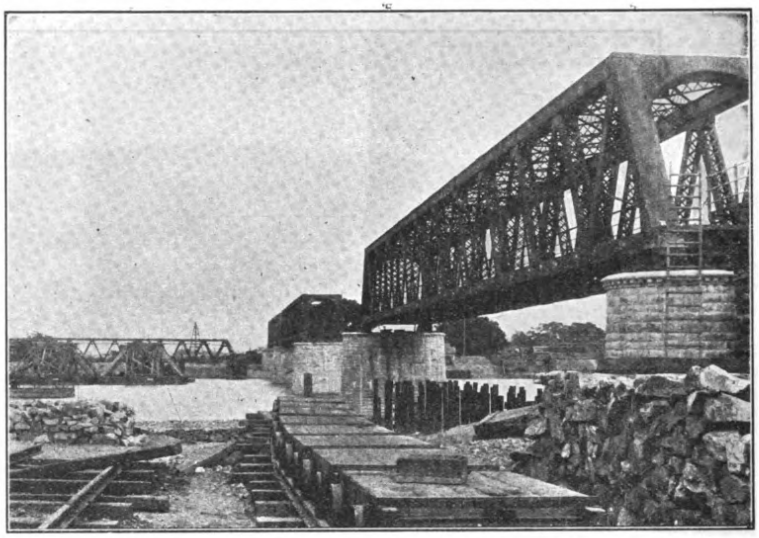
CANTON-KOWLOON RAILWAY.—TAI SHA TOU (CANTON) STATION

Sleepers are of New South Wales hardwoods mostly Eucalyptus, hewn, 8 feet by 9 inches by 5 inches, and the superior lasting qualities are undoubted.

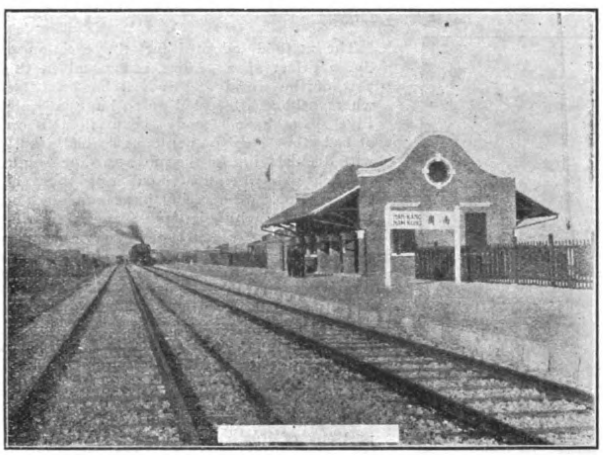
The equipment of the Railway, while not extravagant, is such as will ensure a fair degree of comfort to passengers, and the railway has already been complimented on the smooth running of its trains.

The type of locomotive at present adopted is 2-6-0, outside cylinders 19″×24″ stroke, double bogie tender for 3500 gallons of water and 5½ tons of coal, weight of engine and tender loaded 101½ tons, maximum axle load 16½ tons, diameter of driving wheels 5 feet, manufacturers, the North British Locomotive Company Limited, Glasgow.

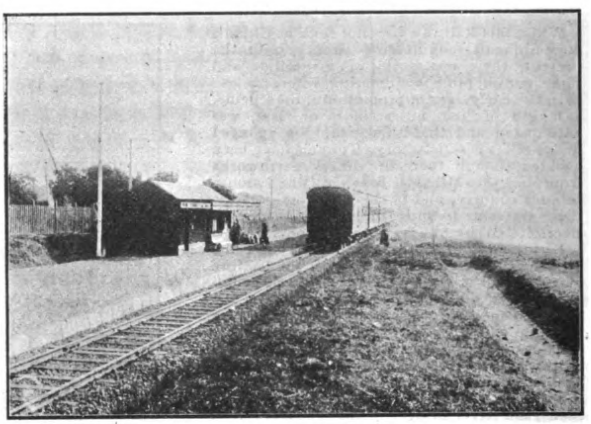
Eight carriages at present in use were supplied as to frames and bogies by the Metropolitan Carriage & Wagon Company, Birmingham, the bodies being manufactured and erected by the Hongkong & Whampoa Dock Co., Ltd., of Hongkong who sent up the carriages to Canton ready for running by lighter towed by a launch. Twenty-three similar carriages are under contract with the Tong Shan Works of the Imperial Railways of North China. The type of carriage adopted is as follows:—length over platforms 61 feet, 4 wheel bogies, body of teak with varnished teak lagging outside and light wood inside, high dome roof with torpedo ventilators. The trains are continuous with standard central couplers and Westinghouse Brake throughout. The first class carriages have a side corridor with coupés and a card saloon, rattan seats and cushions and electric light equipment. For sound design and workmanship combined with reasonable economy, the type of carriages adopted, which has also been introduced on the British Section of the railway, is considered eminently satisfactory.



THE TUNG KUN RIVER BRIDGE, CANTON-KOWLOON RAILWAY.



CANTON-KOWLOON RAILWAY.—NAM KONG, 3RD CLASS STATION

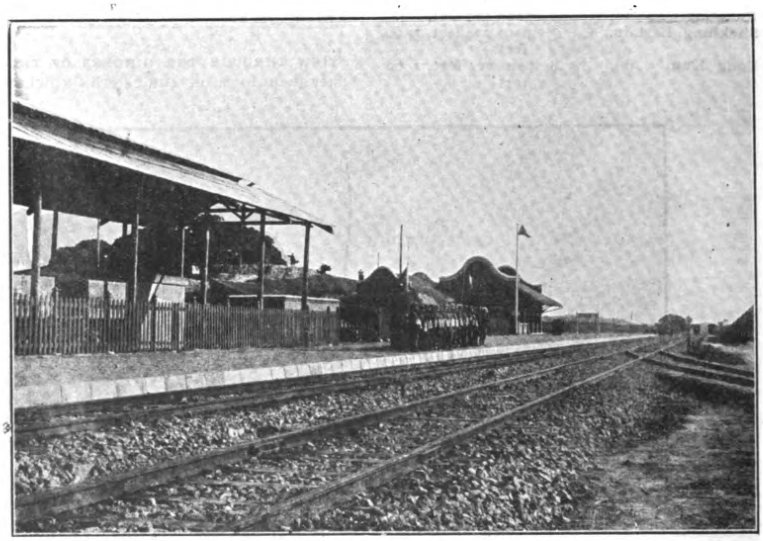


SUN TONG HALT ON THE CANTON-KOWLOON RAILWAY.

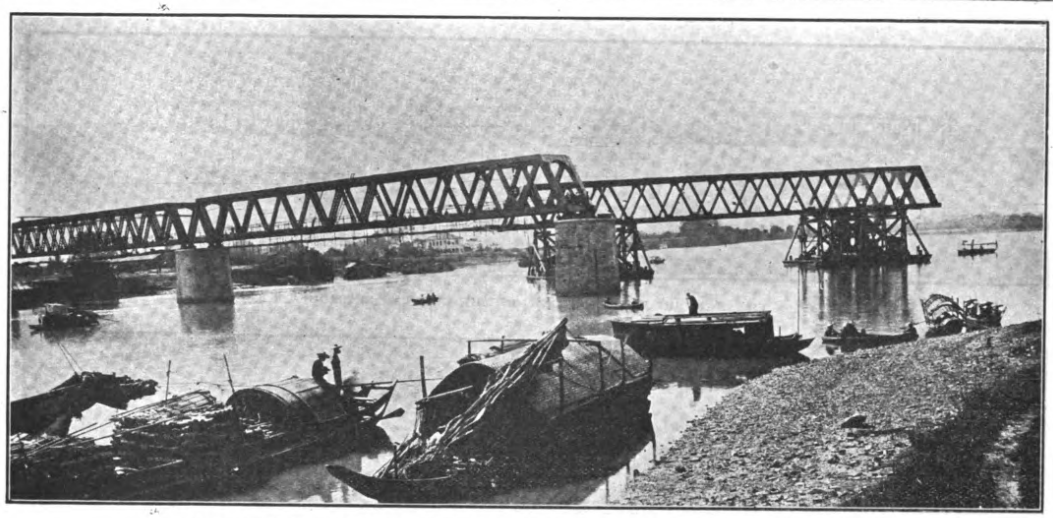
The terminal station at Tai Sha Tou, Canton, as the illustration indicates, is now completed and in use as a general head office, as well as providing station accommodation.

The smaller stations on the line are simple structures sufficient to serve local demands, while permitting extension and development with the growth of traffic.

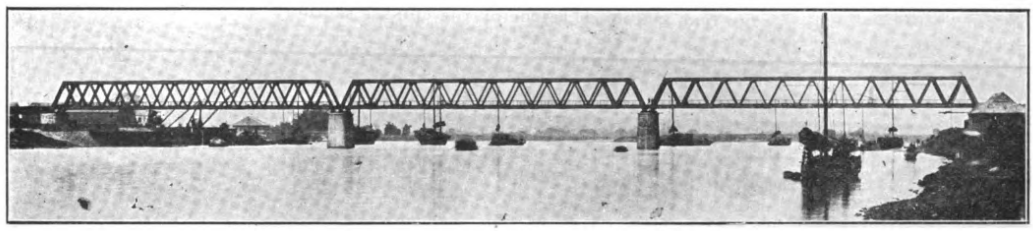
With the exception of Sheklung on the East River, which is a distributing center of some considerable importance, though not a large city, there are no towns of importance contiguous to the railway. There are however many villages and a large population, and the rapid and cheap means of transport afforded by the open section of the line is already hailed with much gratification by the inhabitants.



CANTON-KOWLOON RAILWAY.—SIEN TSUN, 3RD CLASS STATION



THE EAST RIVER BRIDGE: LAUNCHING A 224-FOOT SPAN, CANTON-KOWLOON RAILWAY



THE EAST RIVER BRIDGE ON THE CANTON-KOWLOON RAILWAY

In order, therefore, to develop a maximum amount of local traffic, besides 3rd class stations, semi-permanent "halts" have been established at all likely places, which, with a small station staff, should materially assist in building up the traffic of the railway.

The date of opening to through traffic with Hongkong is given as probably some time in August of this year and unless some untoward incident occurs, there appears every indication that this estimate is not over optimistic, for little remains to be done but completion of track laying, ballasting and some station buildings and yards, also the delivery and erection of further rolling stock to meet the needs of traffic.

We are informed that the existing section of open line will be extended to Sheklung (Mile 40) during April or May.

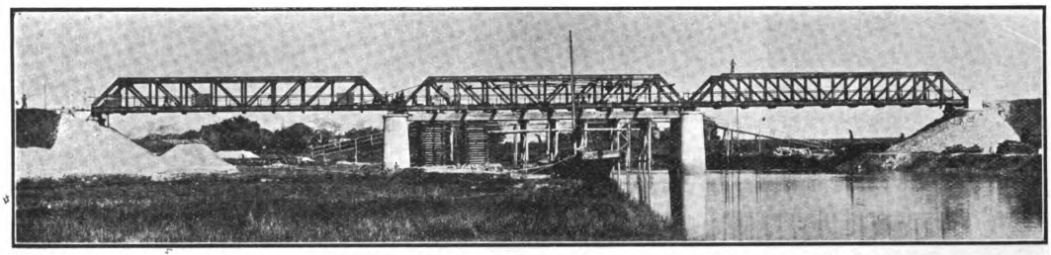
Upon the completion of the railway the travelling public will find an interesting journey awaiting them, the British and Chinese Sections combined, affording unusual and very beautiful scenic attractions apart from any engineering interest.

It is no exaggeration to state that the short railway journey from Hongkong to Canton will rank very high in point of interest, and the development of the line into one of the most important and financially successful railways is merely a question of time.

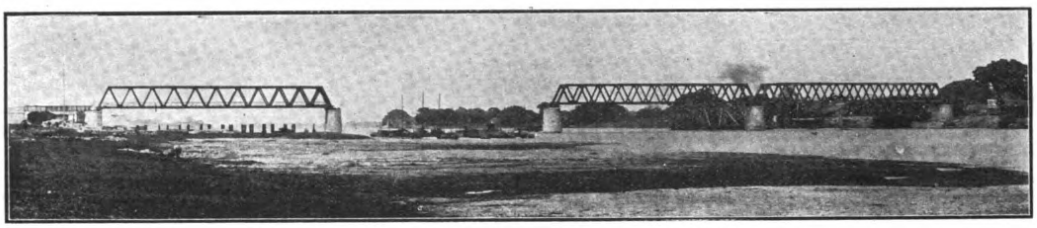
Mr. Frank Grove, M. Inst. C. E., Engineer-in-Chief of the Chinese section of the Canton-Kowloon Railway, deserves great credit for the progress made in the construction of this important line. Notwithstanding the many discouragements endured and prejudices to overcome, together with engineering difficulties encountered, Mr. Grove has upheld the prestige of British engineering construction standards in the enterprise now nearing completion. He was not discouraged by the many trying delays due to friction between the officials and the Chinese in their endeavor to fulfil their obligations to the railway, and the inhabitants along the right of way. By the exercise of great patience and tact, he carried on the work under these trying conditions and today it might be said that instead of the railway being unpopular, it appeals generally to the inhabitants who formerly lost no opportunity to obstruct the work.

Mr. Grove was formerly connected with the Bengal-Assam Railway previous to undertaking the position he has for years occupied. Indeed the Hongkong-Canton line is indebted to the Assam-Bengal for Mr. E. S. Lindsay, M. I. C. E., the Chief Resident Engineer, and Mr. H. H. Logan, assistant engineer of the

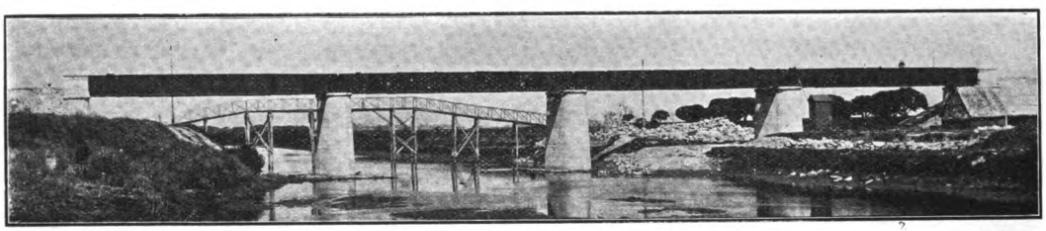
THE SHEK TAN RIVER BRIDGE



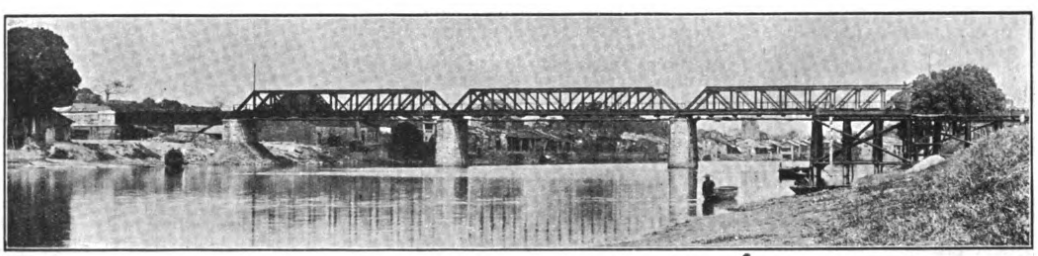
THE KAN SUI RIVER BRIDGE ON THE CHINESE SECTION



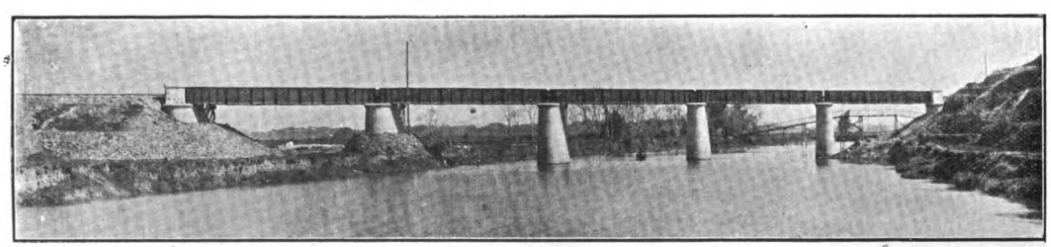
THE TUNG KUN RIVER BRIDGE ON THE CHINESE SECTION



THE PE KONG RIVER BRIDGE ON THE CHINESE SECTION



THE SHEK TAN RIVER BRIDGE ON THE CHINESE SECTION

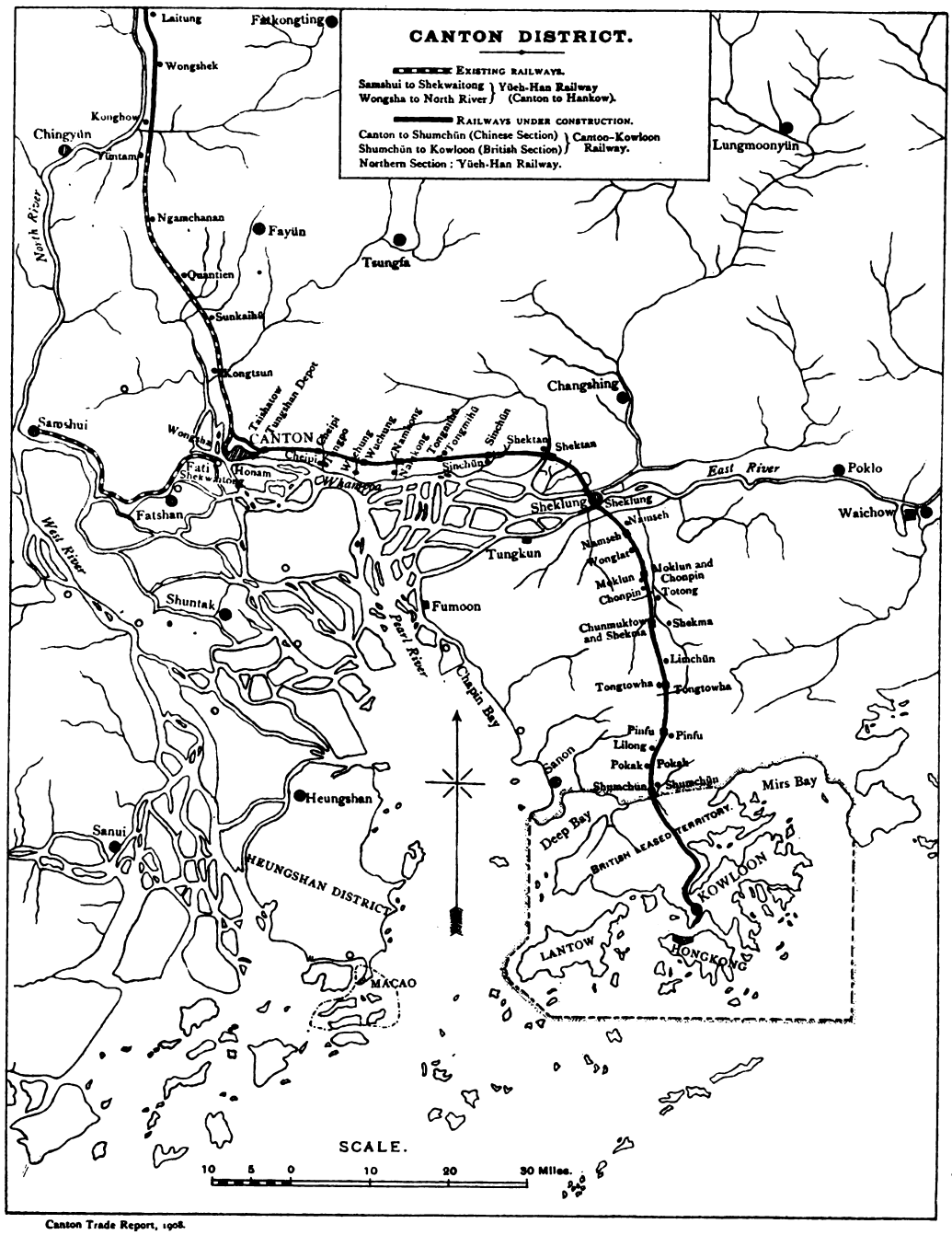


THE SIEN TSUN RIVER BRIDGE ON THE CHINESE SECTION

British section, who also served on this railway previous to their acceptance of these positions.

On the date of the opening of the first section Mr. Grove said:—"While delay is to be regretted, it should not be lost sight of that the rapid acquisition of large areas of land in the Kwangtung province presents a difficult task to Chinese officials which is not easily surmounted owing to the customs of China and the care necessary to avoid serious disturbances, especially in dealing with the removal of graves, tombs and temples.

With the exception of some comparatively trivial affairs it is at least a matter for congratulation that land purchase has proceeded to the extent indicated without great friction between officials and inhabitants, known in many districts for exceptionally truculent and determined habits, and that the safety of foreign engineers who have endeavoured to do their duties under trying conditions, has not caused greater anxiety than that experienced."



Canton Trade Report, 1908.

MAP OF THE CANTON DISTRICT SHOWING CANTON-KOWLOON RAILWAY LINE

THE FORMOSAN SUGAR INDUSTRY*

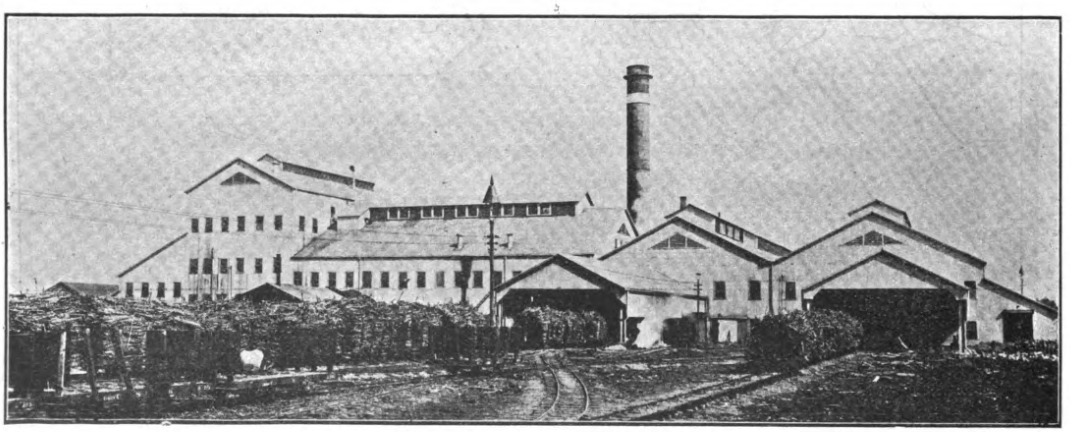
Sugar did not originally exist in Japan, but was brought over as tribute about 1,140 years ago from China. Since that time records regarding the commodity are lacking, and trace of it is lost for a number of years; but about 330 years ago, when trade relations were opened with the neighbouring countries, we find sugar figuring among the imported goods. It was also during this period that the sugar cane was first introduced into Japan, and it has been proved by history that the cane was first planted in the Luchu islands. It is recorded that at this time some inhabitants of the island of Oshima who were cast on to the coast of China managed to learn the method of manufacturing sugar and introduced it into Japan on their return. The process of manufacture appears to have been of the most rudimentary nature, sugar being only used for medical purposes and as a luxury by the nobility and wealthy people. Sugar was gradually imported in larger quantities as the demand for it increased. It was about 180 years ago that Yoshimune, eighth of the Tokugawa Shoguns, encouraged the plantation of sugar cane and the manufacture of sugar by distributing the sugar cane plants from the Luchu islands to the different clans. He saw the disadvantage to Japan of being obliged to depend on foreign supply, and specially interested himself in the manufacture of sugar. Among the different *Daimyos*, Matsudaira Yoriyasu, Prince of the Takamatsu clan, manifested the greatest interest in the subject. The province of Sanuki, of which he was the feudal lord, often suffered from famine on account of the lack of irrigation, so he encouraged the plantation of sugar cane in his dominion with the object of raising the revenue, in order to cover the deficit frequently caused by a bad harvest. He ordered his retainers Hiraga Gennai and Ikeda Genbun to study the process of sugar manufacture, and one of the followers of the latter—Mukoyama Shukei—was able to attain the object and succeeded in manufacturing sugar of a superior quality. This was about 120 years ago, and since then the manufacture of sugar has become the staple industry of Sanuki province, Kagawa Prefecture, the name of "Sanuki Sambon" or Sanuki pure white sugar having become quite famous throughout Japan. About 90 years ago, when the finances of the Takamatsu clan were in a very embarrassed condition, the revenue derived from the sugar industry saved the situation, and the industry was further developed in the district. With regard to the other clans, the result was far from satisfactory. The development of the industry was, in most cases, either retarded or utterly neglected, the reasons for such a state of affairs being multitudinous. Some of the districts were entirely unfit for the cultivation of sugar cane; in others either the area of the sugar cane plantation was restricted, or the process of manufacture kept a strict secret. Some of the clans went so far as to prohibit the cultivation of the plant, deeming sugar an injurious luxury. Even the Central Government of the Shogunate, which had been scared by several cases of famine, laid great impor-

KOHEKIRO MILL OF THE TAIWAN SEITO COMPANY.—CAPACITY: 1000 TONS OF CANE IN 24 HOURS

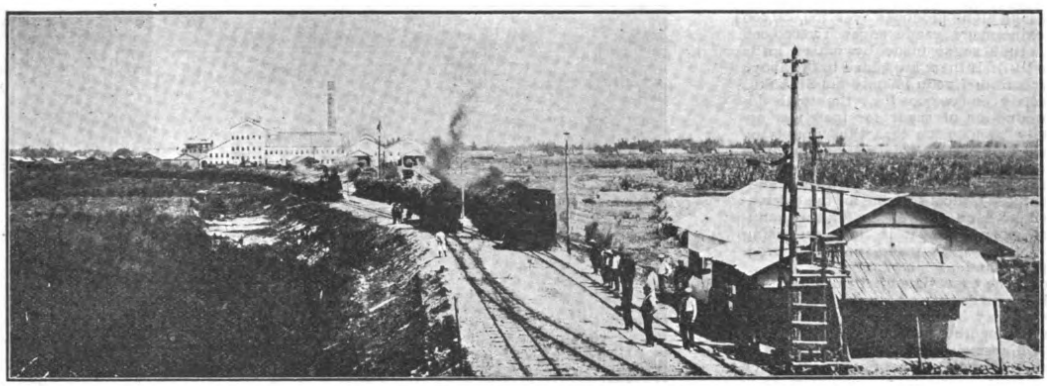
tance upon cereals, and forbade the cultivation of anything but cereals on the farms. It was considered that the sugar cane extracted richness from the soil, and orders were issued restricting sugar cane plantations to the waste land bordering the river beds. Some of the authorities even held the opinion that the development of the sugar industry in Japan would prove detrimental to the foreign commerce with the Dutch. So great was the prejudice and opposition that the only localities where the sugar industry remained were in Luchu Islands, Oshima and Sanuki.

Notwithstanding the unfortunate check that was placed on its early development, the subject of manufacturing sugar attracted the public attention, and we find that, as early as 110 years ago, a Mr. Kimura published a treatise on the manufacture of sugar, while there were many other eminent men who interested themselves in the subject. By these means a great impetus was indirectly given to the development of the sugar industry in Japan, and the production of sugar had attained considerable proportions during

* By Dr Teijiro Yamamoto, M. P., in Japan's Industries.



AKO MILL OF THE TAIWAN SUGAR COMPANY.—CAPACITY: 3000 TONS OF CANE PER DAY



AKO MILL OF THE TAIWAN SUGAR COMPANY

the years preceding the Meiji Restoration. With the abolition of the clan system of Government after the inauguration of the new régime, protection accorded to the sugar industry by the different clans was withdrawn, and the domestic sugar industry suffered a serious set-back by reason of the competition of imported sugar. This state of affairs turned the attention of the authorities to the encouragement and revival of the sugar industry. The Japanese Government, taking into consideration the fact that beet sugar was extensively manufactured in Occidental countries, and also being satisfied that beet was superior to the cane as raw material (because while the growth of the latter was limited to tropical climates, the former was suitable for temperate as well as cold climates), ordered samples of beetroot from the United States in 1872 and experimented with them in the North-Eastern provinces. Subsequently, in 1876, Mr. (now Marquis) Masayoshi Matsukata, who was Director of the Bureau for the Development of Agriculture, brought to Japan beetroot seeds from France and planted them experimentally in the Norh-Eastern provinces. The results were highly satisfactory, and as a result of the above trials, a sugar manufacturing plant was purchased from France in 1879 at a cost of over Y130,000 which was installed by the Mombetsu Sugar Company, established at Mombetsu in Hokkaido under Government control. The whole business was subsequently transferred to a private concern, which commenced operations under the title of the Mombetsu Sugar Manufacturing Company. Some time afterwards a large sugar manufacturing company was established at Sapporo, in Hokkaido. However, after several years' experience, it was proved that the climate of the Hokkaido was not suitable for the culture of beet, and both of the above concerns were eventually compelled to cease operations, and for some years the question of sugar manufacture on a large scale was shelved. In 1895, however, when the island of Formosa was ceded by China to Japan, the Japanese Government issued regulations for the protection of the sugar industry, and ever since that time the subject of manufacturing the crude product from sugar cane has been attracting the attention of both the authorities and the people, immense strides having since been made in the progress of the industry. At the present time there are ten large sugar manufacturing concerns, worked by machinery, the total capital invested being Y50,000,000 and the value of the machinery installed exceeding Y10,000,000.

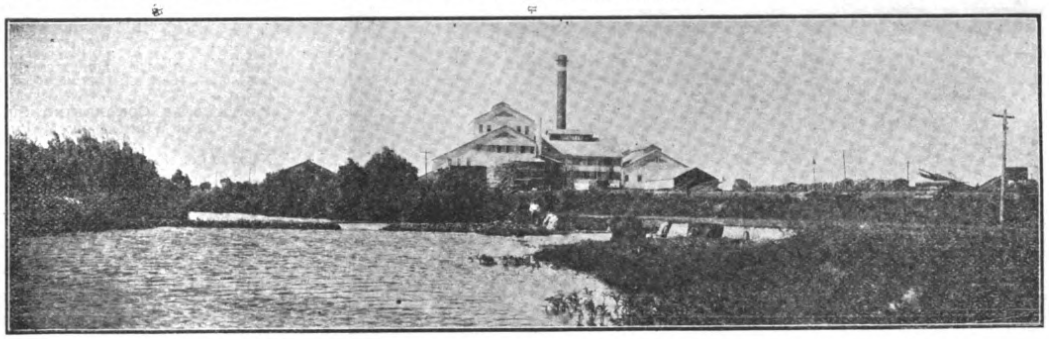
The general business is divided into two sections, namely, the sugar refining and crude sugar industries. In Japan the former industry was developed by degrees, and in 1895 the Nippon Sugar Refining Company was established by Baron Eichi Shibusawa and others, while in Tokyo Mr. Tosaburo Suzuki inaugurated The Nippon Refined Sugar Manufacturing Company, and in both machinery of the latest and most improved pattern was installed. Although afterwards a few other sugar refineries were established, these were either bought up or incorporated, so that at present there are only three sugar refining companies in Japan, namely, Dai Nippon Sugar Manufacturing Co., Ltd. (Capital Y12,000,000), Yokohama Sugar Refining Co. (Capital Y2,250,000) and Kobe Sugar Refining Co. (Capital Y2,000,000) excepting those under contemplation and a few concerns which are engaged in a subsidiary industry of sugar manufacture in Formosa. The total producing capacity per day is about 800 tons, the total output for 1908 being approximately 1,500,000 bags.

The companies manufacturing crude sugar are almost all located in Formosa where the industry has been engaged in for more than a century, though of course since Japanese capital and knowledge have been applied to the development of the industry in the island it has shown marked progress. The Formosan Sugar Manufacturing Co., the pioneer of the industry on the new basis, was established in 1900, and was followed by the Yensuiko Sugar Manufacturing Co. and a few others. As the result of assistance and encouragement afforded by the authorities, the yearly output has been speedily augmented so that in 1908 there were eight large companies and about 900 native sugar mills, the latter being of a most crude and primitive description. The producing capacity is as follows:—

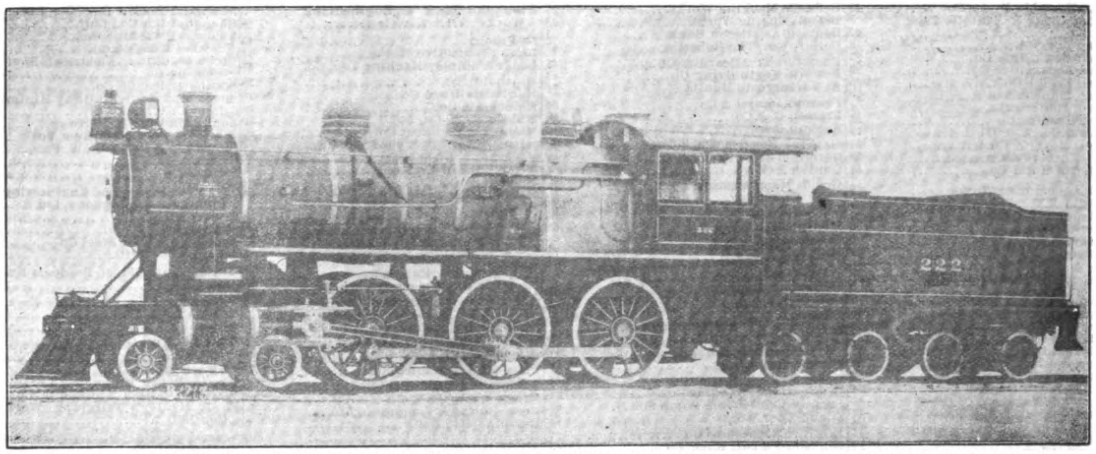
Sugar Manufacturing Cos. with new machinery.,	8 Companies.	184,140,000	lbs.
Improved native sugar mils	53 do.	63,648,000	,,
Old native sugar mills	845 do.	22,824,000	,,
Total		270,612,000	,,

Thus Formosa stands first as the sugar-producing locality of Japan, the Luchu Islands coming next, having developed their sugar industry as the result of the promulgation of the sugar protection regulations in 1906. A few other localities are also supplying crude sugar to the refineries on the main land.

The total amount of sugar consumed in Japan may fairly safely be estimated at from 500,000,000 lbs. to 550,000,000 lbs. per year. The amount of consumption about the year 1895 was not more than 350,000,000 lbs. and while there may have been some fluctuations during the interval as the result of the sugar consumption tax and the effects caused by the additional extraordinary special taxes levied after the late Russo-Japanese war, the demand for sugar has been gradually increasing to a considerable amount up to the present day, and it is also evident that there will be a further increase in demand in the future. Until a few years ago, 150,000,000 lbs. was supplied by domestic companies, while the balance, 350,000,000 lbs., was supplied by imports from foreign countries. Of late, however, the sugar industry of Formosa has undergone such unprecedented expansion

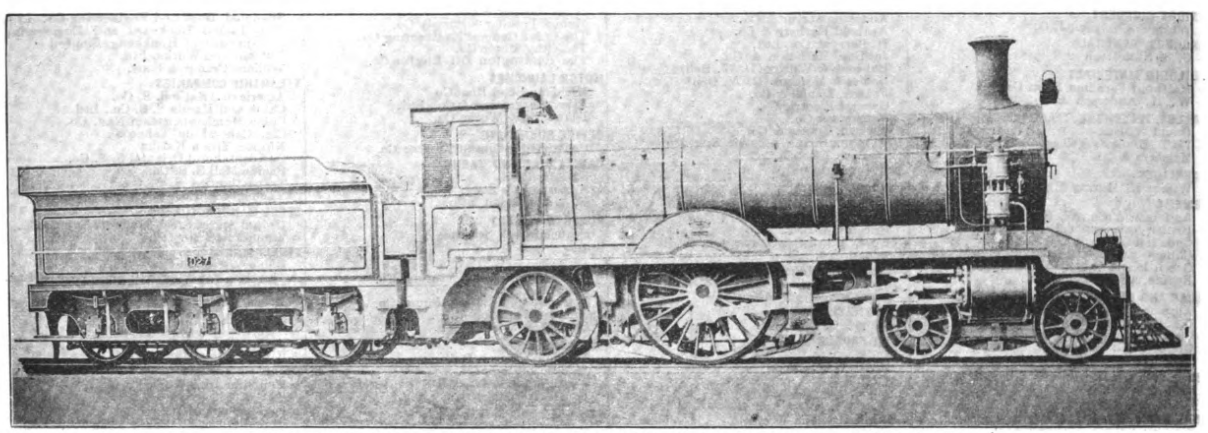


SHAROKEN MILL OF THE TAIWAN SUGAR COMPANY.—CAPACITY: 1000 TONS OF CANE PER DAY



8-WHEELED TENDER LOCOMOTIVE BUILT FOR THE IMPERIAL GOVERNMENT RAILWAYS OF JAPAN (KOREAN LINES) BY THE AMERICAN LOCOMOTIVE COMPANY OF NEW YORK.

The accompanying illustration is of a locomotive built by the American Locomotive Co. of New York for the Japanese Railway Board for the Korean lines. It was constructed for standard gauge track 4″ 8.5″ and its dimensions and description follow: Cylinders, 20″ dia., 26″ stroke; driving wheel-dia. 66″; boiler, dia. 64″, pressure 180 lbs.; fire box, length 96 125″, width, 60.25″; tubes, number, 310, dia., 2″, length 15′ 2″; wheel base-driving, 13′ 6″, engine 24′ 4″, engine and tender, 49′ 8.5″; weight in working order, leading 31900 lbs., driving, 117200 lbs.; engine, 14900 lbs., tender, 86400 lbs.; fuel, soft coal; heating surface, tubes 24480 sq. ft., fire box, 132 sq. ft.; total 2580 sq., ft.; grate area, 40 sq. ft.; maximum tractive power, 24,100 lbs; factor of adhesion, 4.86; tender, type 8-wheeled; capacity—water 4,000 gals., fuel 7 tons.



LOCOMOTIVES BUILT FOR THE SHANGHAI-NANKING RAILWAY BY KERR, STUART & CO.

The illustration above is of one of four passenger locomotives built for the Shanghai-Nanking Railway by Messrs. Kerr, Stuart & Co., Limited, of London and Stoke-on-Trent. The Consulting Engineers were Messrs. Sir John Wolfe-Barry and A. J. Barry.

As will be seen from the illustration, the engines are of the four two type with six-wheeled tenders. The leading dimensions are given below:—Gauge 4′8½″; Driving Wheels 7′0″ dia., Bogie Wheels 3′6″ dia., Trailing Wheels 4′9″ dia., Total Wheel Base 48′9″, Length over couplers—engine & tender—57′3¾″. Tender capacity—fuel 7 tons, water 3500 gallons; Weight empty—Engine, 50 tons 6 cwts, Tender 19 tons 9 cwts, Weight in working order, Engine 56 tons 1 cwt, Tender 42 tons 13 cwts. Total 98 tons 13 cwts.

The cylinders are 18″ in diameter with a stroke of 26″, and are fitted with bronze "D" slide valves driven by Stephenson link motion.

The boiler is designed for a working pressure of 180 lbs. per square inch, and has an outside diameter at the front of 4′9½″, the telescopic barrel being 12′10½″ in length. The internal fire box is of copper and is fitted with copper stays. Brass tubes to the number of 188 are used in the boiler, these giving a heating surface of 1567.39 square feet. With 182.61 square feet in the fire box, this gives a total heating surface of 1650 square feet.

These engines were wanted urgently, and the order was placed with Messrs. Kerr, Stuart & Co., Ld., on April 12th-1909. Notwithstanding the Whitsuntide Holidays and the period of mourning for the late King, the first two engines were steamed on the 8th and 11th June, a record, we believe, in British Locomotive engineering.

These engines have been in operation for some time on the express service between Shanghai & Nanking, and we understand from experiments conducted by the Locomotive Superintendent, Mr. E. J. Dunsaan, M. I. M. E., that this type of engine shows considerable economy in coal consumption.

Dunstan